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LIST OF PUBLICATIONS INDEXED AND SURVEYED BY THE IMPERIAL BUREAU OF ANIMAL HEALTH.

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Compte rendu des Séances de l'Académie d'Agriculture de France.
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Archiv für Protistenkunde.
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II. JOURNALS WHICH CEASED PUBLICATION IN 1936.

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Allatorvosi közlöny.

III. JOURNALS WHICH CHANGED THEIR NAME IN 1937.

GREAT BRITAIN.

Journal of State Medicine. *Changed to* Journal of the Royal Institute of Public Health and Hygiene.

FRANCE.

Revue vétérinaire et Journal de Médecin vétérinaire et de Zootechnie. *Changed to* Revue de Médecine vétérinaire.

DISEASES CAUSED BY BACTERIA AND FUNGI.

PLASTRIDGE, W. N., & HARTSELL, S. E. (1937). **Biochemical and Serological Characteristics of Streptococci of Bovine Origin.**—*J. infect. Dis.* **61.** 110-121. 4 tables. [15 refs.]

157 strains of weakly haemolytic streptococci, grown from fresh milk samples, were divided into the following three broad groups on the basis of biochemical tests and the relationship of the organisms to evidence of mastitis :- (1) streptococci possessing the biochemical characteristics of *Str. agalactiae* – 122 strains ; (2) mannite fermenters associated with evidence of mastitis – 19 strains, and (3) streptococci regarded as saprophytes – 16 strains. These three groups were serologically distinct.

Precipitin tests showed that in the first group all cultures isolated from animals with permanent infection belonged to Lancefield's Group B. Thirty of the 122 strains, however, although biochemically like *Str. agalactiae*, differed from this organism serologically and in producing a relatively transient infection, with or without obvious signs. P. and H. suggest that the designation "*Str. pseudo-agalactiae*" might be used provisionally for these strains.

There was evidence that the 19 strains in the second group belonged to Lancefield's Group E.

The results in general show that, while biochemical tests are useful for the broad grouping of streptococci of bovine origin, precipitin tests are necessary for final identification.

Strongly haemolytic streptococci were rarely isolated from milk samples ; of four such, one belonged to Lancefield's Group B and three to her Group C.

[It is doubtful whether there is sufficient justification for the new designation, *Str. pseudo-agalactiae*, either on the basis of a lower degree of pathogenicity or on serological grounds. P. and H. do not give full details of their serological work, but there was clearly some cross-reaction with the types of Group B recognized by LANCEFIELD. No attempt was made to correlate the types with those described by STABLEFORTH – *V. B.* **2.** 366].—F. C. MINETT.

HASTINGS, E. G., & BEACH, B. A. (1937). **The Production of Milk of Abnormal Composition by Animals Free from Udder Streptococci.**—*J. agric. Res.* **54.** 199-220. 6 tables. [2 refs.]

Milk from cows with chronic mastitis is abnormal and about 90% of such cows are infected with *Streptococcus agalactiae*. Indirect tests for abnormalities in milk are largely used in the control of this disease.

Thirty-one non-pregnant yearlings free from tuberculosis and from *Brucella abortus* infection were assembled on a farm, which had been free from cattle for 8 months, and isolated from all other cattle save stock bulls. When the animals came into milk, routine samples of 30 c.c. of fore milk together with samples of whole milk from abnormal udders were examined for the whole of the lactation period. Altogether 3,000 samples of fore-milk were analysed for chlorine, catalase and pH and cultured on glucose agar and in milk.

No streptococci were found in any sample nor was any type of bacteria found which could be related to the abnormalities which were indicative of chronic mastitis. No differential study of the types of bacteria found in normal and abnormal milk was made, but it was concluded that the abnormalities were due to an increase in the usual bacteria found in normal udders.

Only 8 of the animals were free from abnormality at any time, but it was concluded that 17 could be classed as normal whilst 14, which had given abnormal

milk in at least one quarter, were classed as abnormal. In some cases abnormality was present at the beginning of lactation ; it appeared in others at a later date and, although it cleared up in some animals, it appeared to be very resistant. It would appear that the condition is not transferred from one animal to another.

Methods of prevention were not ascertained, but there are no reasons to assume that the abnormalities were of pathological significance, although it is suggested that such abnormalities may be necessary for infection with streptococci. The total bacterial content of abnormal milk was, in general, higher than that of normal milk but it did not appear high enough to account for physiological disturbance.

The study is to be continued in subsequent lactations and in another group under similar conditions.

[There can be little doubt that the causation of the udder abnormalities observed would have been revealed if the bacteriological technique used had been adequate. It is strongly suspected that *Staph. aureus* was the organism responsible, but, as MINETT [*V. B.* **7.** 508.] has shown, in order to demonstrate this organism satisfactorily it is advisable to employ ox- or sheep-blood agar plating. Plain agar or agar containing horse-blood is not sufficiently differential.

The paper provides strong support for the view that indirect methods for diagnosing mastitis should be regarded with disfavour].—H. E. BYWATER.

I. RAE, M. V. (1936). **Epizootic Streptococcic Myocarditis in Guinea Pigs.** —*J. infect. Dis.* **59.** 236-243. 1 table. [Numerous refs.]

II. SEEGAL, Beatrice C., & SEEGAL, D. (1936). **Lytic Action of Certain Strains of Hemolytic Streptococci on Fresh Sterile Kidney and Other Tissues.**—*J. Bact.* **32.** 621-629. 2 figs., 1 table. [7 refs.]

III. SAFFORD, C. E., SHERMAN, J. M., & HODGE, H. M. (1937). **Streptococcus salivarius.**—*Ibid.* **33.** 263-274. [19 refs.]

I. R. describes an epizootic amongst g. pigs caused by a capsulated haemolytic streptococcus. The disease took the form of an acute fatal septicaemia. Clinically an acute non-suppurative lymphadenitis without sinus formation was common. In 80% of natural cases there were multiple necrotic lesions in the myocardium. Histologically these cardiac lesions showed a poor cellular reaction. The lymph nodes presented a granulomatous picture, with hyperplasia of the reticulo-endothelial cells.

The disease was reproduced experimentally in g. pigs, rats and mice.

II. It was found that certain haemolytic streptococci had the power of lysing fresh sterile monkey kidney tissue incorporated in liquid media.

The streptococci which possessed this nephrolysin were β-haemolytic and belonged to Lancefield's Group A. Strains producing this lysin also produced fibrinolysin, haemolysin and Frobisher's " histase " enzyme. The nephrolysin was filtrable and it was neither organ nor species specific.

III. A study was made of 322 strains of non-haemolytic streptococci from human throats. Of these 290 were *S.s.*, that is to say, they occurred in short chains. On horse-blood agar they gave a γ to weak α reaction. The maximum temperature of growth was 45°C., and they failed to resist 60°C. for 30 minutes in milk. In glucose broth a final pH of 4·4 to 4·0 was reached, sodium hippurate was not hydrolysed, ammonia was not produced, starch was not hydrolysed, and gelatin was not liquefied. Glucose, maltose, lactose and sucrose were fermented.

The 32 other strains varied in one or more respects from the above, but not sufficiently to be considered as separate species.—D. L. HUGHES.

UMENO, S. (1936). **On the Colony-Type of *Streptococcus equi*. I. Comparison of the Morphological Cultural and Biological Characters Between Three Isolated Colony-Types.**—*J. Jap. Soc. vet. Sci.* **15.** 296-318 of pt. 1. 4 figs. on 1 plate, 5 tables, 1 chart. [Numerous refs.] [In Japanese: abst. from English summary pp. 78-81 of pt. 2].

From 87 stock cultures of *Str. equi* colonies of three types were obtained by cultivating 18-20 hours broth culture on serum-agar plates. These are called G (granular), F (flat) and C (compact). Recently isolated cultures always gave the G type, and cultures over 5 years old usually the F type, those of 2 years C or F. Details are given regarding differences in colonial appearance on agar and blood agar, in broth, in length of chains, in capsule formation, in haemolysin production, in growth upon blood-agar plates containing glucose, in fermentation tests, and when subinoculated on plates already covered with a growth of pasteurella.

Though the original must be consulted for details it may be noted that the F type fermented lactose and sorbite whilst the G and C types did not. It is suggested that the lactose-fermenting strains of *Str. equi* described are in fact variant F forms of the original non-lactose fermenting G type.—A. W. S.

STAFSETH, H. J., THOMPSON, W. W., & NEU, Lisa. (1937). **Streptococcic Infections in Dogs. I. "Acid Milk", Arthritis and Post-Vaccination Abscesses.**—*J. Amer. vet. med. Ass.* **90.** 769-781. 3 tables. [11 refs.]

In an investigation to determine the cause of losses of puppies thought to be due to so-called acid milk, the authors were led to a study of a streptococcus of the haemolytic or β type, for which they propose the name *Streptococcus canis n.sp.* The organism is described. It was isolated from numerous sites in dead puppies, and also from pus from post-vaccination abscesses in older dogs, and its natural habitat appeared to be the genital tract of females. The authors also describe two cases of articular rheumatism successfully treated with vaccine prepared from, *inter alia*, a haemolytic streptococcus. Two tables are given of the streptococci isolated from 73 dogs examined.—E. E. JELBART.

MINETT, F. C. (1937). **Staphylococcus Infections in Animals, with Special Reference to Toxoid in Preventive and Curative Treatment.**—*Vet. Rec.* **49.** 179-183. Discussion pp. 186-187. [11 refs.]

The whole outlook of preventive and curative treatment of staphylococcus disease has been altered by a realization that many pathogenic staphylococci resemble diphtheria and tetanus bacilli in producing soluble toxins.

M. briefly discusses the extent to which staphylococci are responsible for disease in animals, and he points out that experimental investigation indicates that staphylococcus immunity is antitoxic rather than antibacterial.

Medical literature shows the value of staphylococcus toxoid, and antitoxin. Staphylococcus toxoid is prepared by adding formalin, say 0·3% to 0·5% to the toxic filtrate, and allowing the mixture to remain at 37°C. until it no longer haemolyses red blood corpuscles, or causes necrosis on intradermal injection in g. pigs.

It appears from papers which have been produced that, when potent toxoid is used in the proper way, the results are more favourable than those likely to follow any other form of treatment.

A thorough clinical trial of staphylococcus toxoid in animal practice is advocated by close co-operation between the clinician and the pathologist.
—J. M. L. PENHALE.

RIEDMÜLLER, L. (1937). Ueber den Milzbrand. [**Anthrax in Switzerland**].—*Schweiz. Arch. Tierheilk.* **78.** 499-514. 6 tables, 2 graphs. [17 refs.]

A statistical review of anthrax in the domestic animals of Switzerland from 1910 to 1934. Out of 1,660,226 cattle and 1,002,860 pigs only 114 cases were reported in 1934. Anthrax only appears sporadically and is imported in foreign food. Recently this danger has decreased; this may be due to procuring the foodstuffs from countries from which the disease is absent or to more effective control measures in countries previously infected. Nevertheless the danger of importing anthrax remains and, therefore, also the necessity for public control measures. R. recommends the obligatory notification to the veterinary office of every human case of anthrax in order that the sources of infection may be traced.

—G. HARTMANN (VIENNA).

ERDEŠ, D. (1937). Intrauterina infekcija kod antraksa. [**Congenital Anthrax in G. Pigs**].—*Jugoslov. vet. Glasn.* **17.** 94-97. 1 table. [6 refs.] [German summary].

E. infected pregnant g. pigs, some with attenuated and some with virulent anthrax bacilli. After death no visible lesions were found in the foetuses, but microscopic examination and culture of their organs gave different findings, according to whether the dam was infected with virulent or with attenuated bacilli. In the first case *Bacillus anthracis* was cultured from the foetal organs; in the second case a few degenerated bacilli were found in the blood and organs, but cultures from them were sterile. E. concludes that, in anthrax, intra-uterine infection takes place and that bacilli pass to the foetus. The embryonic tissues and juices are, however, so resistant that the penetrating bacilli lose their viability in a period of time which depends upon their degree of virulence, and are not able to produce pathological changes.

BOQUET, P., & SCHAEFER, W. (1937). Sur la résistance des cobayes pseudotuberculeux à l'infection charbonneuse. [**Resistance to Anthrax of Guinea Pigs Infected with** *Past. pseudotuberculosis*].—*C. R. Soc. Biol. Paris.* **124.** 601-602. [1 ref.]

G. pigs suffering from pseudotuberculosis and showing nodular lesions of the liver and spleen *post mortem*, were found to resist twice the lethal dose of the second anthrax vaccine [presumably Pasteur's vaccine]. Animals vaccinated by two injections of *Past. pseudotuberculosis* were also appreciably resistant to the second anthrax vaccine in the absence of macroscopic lesions of pseudotuberculosis.

—D. L. HUGHES.

—. (1936). RABAGLIATI, D. S., DEVINE, B., STIRLING, & JORDAN, L. [with General Discussion]. **Tubercle-Free Herds – Present Position and Policy.**—*Trans. 22nd annu. Conf. Nat. Ass. Prev. Tuberc. 1936.* pp. 143-187.

Attention was drawn to the awakened interest of health authorities and the public in a pure milk supply and it was pointed out that only milk from tuberculin-tested herds is free from risk of infection with tubercle bacilli. Mention was made of the Birmingham Corporation Scheme for tuberculin testing herds supplying milk to that City. The increase in licensed T.T. herds was attributed largely to the fact that producers of T.T. milk escape the levy imposed by the Milk Marketing Board on other producers. Mention was made of the scheme for eradication of TB. conceived by the National Veterinary Medical Association, Gt. Britain, 1929, but which was not acted upon by the government. Reference was made to the report of the Cattle Diseases Committee of the Economic Advisory Council, 1934,

which suggested a skeleton scheme for the eradication of TB. in cattle which would include free tuberculin testing and advice to owners, loans for necessary expenditure involved, higher prices for milk from tested cattle, the compilation of a list of tubercle-free herds and compulsory pasteurization of milk from all other than tubercle-free herds.

An explanation was given of the functioning of the English and Scottish Attested Herd Schemes, 1935 [these are now superseded by revised schemes]. A précis of the regulations of the Milk (Special Designations) Order, 1936, was also given. The common practice of " batch testing " as opposed to the testing of whole herds as units was condemned. Emphasis was laid on the necessity for hygienic rearing of calves as a basis for building up sound herds and of the need for reservoirs of healthy young stock from which producer-retailers might recruit their herds.

The danger to human beings of tuberculous milk was stressed and it was asserted that 7% to 10% of the milk supplies in this country are infected with tubercle bacilli. The Tuberculosis Order, 1925, was criticized because of its failure to reduce the incidence of bovine TB. but it was argued that this Order was not intended to effect such a result. Over a period of 28 years those responsible for the execution of the Birmingham Corporation Scheme for tuberculin testing had found that herds tested for the first time showed an average of 38·2% reactors. The relative scarcity of tubercle-free herds was accounted for by the lack of public demand for safe milk, the high cost to the farmer involved in establishing tubercle-free herds and the hope that an efficient vaccine would emerge and supplant the more drastic method of elimination of reactors. The difficulty of isolating reactors from non-reactors and the expense involved in replacing reactors by healthy stock were mentioned. The opinion was expressed that the quarterly veterinary examinations of accredited herds now being carried out were doing much to pave the way for the establishment of future T.T. herds. It was felt that efforts to eradicate TB. should extend to beef-producing as well as milk-producing herds.
—H. Burrow.

Robertson, A., & Hole, N. H. (1937). **A Preliminary Report on the Problem of the Bovine Skin Lesion Tuberculin Reactor.**—*J. comp. Path.* **50.** 39-57. 2 tables. [Numerous refs.]

R. and H. describe 12 bovine " skin-lesion " tuberculin reactors which, on P.M. examination, showed no systemic lesions of tuberculosis after an extensive search coupled with biological examination of the lymph nodes. The reactions to bovine and avian tuberculins and to johnin are tabulated.

Single or multiple lesions occurred in or under the skin as nodules with a structure very much like a tubercle, lesions from 11 of the cases containing acid-fast bacteria. One animal had a single lesion on its back, one or more limbs were affected in all the others and, of the latter, there were also lesions on the flank of one and on the shoulder of another. The lesions were very vascular and contained more plasma cells than are usually found in tuberculous lesions. Attempts to cultivate the acid-fast bacteria on the usual media, including Twort's medium for Johne's bacilli and the Löwenstein-Jensen medium, all yielded negative results. Animal inoculation tests in g. pigs, rabbits, fowls, mice and calves with material from the lesions were negative for tuberculosis.

R. and H. conclude that the lesions caused the sensitization to tuberculin, but that the acid-fast organisms seen were not necessarily the primary cause of the lesions. They suggest that the bacteria might have been atypical tubercle bacilli, but that they were more probably saprophytic types causing a group sensitization to tuberculin.—C. V. Watkins.

I. Burrow, H. (1937). **Some Aspects of Bovine Tuberculosis.**—*Vet. J.* **93.** 44-48. 1 table.

II. Jordan, L. (1937). **Some Aspects of Tuberculin Testing, with Special Reference to Synthetic Tuberculin.**—*Vet. Rec.* **49.** 114-118.

III. Montgomerie, R. F. (1937). **The Incidence of Tuberculosis in Cattle Breeding Districts.**—*J. R. sanit. Inst.* **57.** 514-523. 3 figs., 3 tables.

I. The author found congenital tuberculosis in two foetuses and in one three-day-old calf. The dams were severely affected with the disease and lesions in the calf were found in the liver, spleen and kidneys and bronchial, mediastinal and hepatic glands. During careful *post-mortem* examinations of 4,535 slaughtered calves 76 (1·67 %) were affected with tuberculosis. According to the situation of the lesions, 24 (0·53 %) were classified as congenital cases.

During the testing of 210 calves under one year old belonging to 17 dairy herds, 19 (9 %) reacted to the double intradermal tuberculin test. The incidence of infection in calves was found to be greatest on farms where the adult stock was severely affected.

The results of *post-mortem* examination of the uterus in 82 cows slaughtered under the Tuberculosis Order showed that in 19 (23·75 %) there was infection of this organ. The author is of the opinion that when tuberculosis of the dam leads to congenital disease of the calf invasion of the uterus has probably occurred during that pregnancy.

II. The author presents a detailed description of the application and interpretation of the double intradermal tuberculin test. He states that doubtful reactions are occasionally experienced and that animals presenting such reactions should be kept under observation and retested in a short period. In differentiating reactions it has been found that a positive diffuse swelling is invariably attached to the underlying tissue at the site of inoculation, whereas the negative pea or bean-like swelling is freely movable and in no way adherent to the underlying tissue. A short account of the preparation of synthetic medium tuberculin is given and the author states that more satisfactory results are obtained with this product than with broth tuberculin.

III. This is a short account of a survey undertaken by the author to estimate the degree of tuberculosis infection in four cattle breeding districts in North Wales. District A comprised 20 farms in which the purchase of calves from the dairying centres was practised and where there was a tendency to keep quite old cows in the herds. Of the total 450 stock tested 53 (11·8 %) reacted to the tuberculin test and of the 109 cows 26 (23·8 %) reacted. District B was typical of those districts in which the rearing of young store cattle and cows for sale into dairying districts is the main industry. The purchase of calves was not so extensive as in district A. Of the total 594 animals in 41 farms only 4·4 % reacted while in 28 farms all the stock was clean. In district C store stock was reared and the age level of the cows was usually high. In 28 farms in which 933 animals were found only 1·4 % reacted while in 20 of the farms no reactors were detected. In these three districts the farm buildings were poor in construction and there was considerable overcrowding. In district D, a lowland breeding area, the housing conditions were better and of the 293 stock tested 21 reactors (7·2 %) were found. From this survey it is apparent that there can be wide differences in the percentage of total tuberculosis infection in agricultural districts dependent on the type of husbandry in practice.—S. J. Edwards.

I. Plum, N. (1937). Undersökningar rörande förekomsten av av typus bovinus förorsakad lungtuberkulos hos Skånes Befolkning. I. Forholdet mellem Menneske og Kvaegtuberkulose set fra et veterinaert Synspunkt. [**Pulmonary Tuberculosis Caused by Bovine Type Bacilli in the Population of Skåne. I. Veterinary Aspects of TB. in Cattle and Man**].—*Skand. Vet-Tidskr.* **27.** 71-76. Discussion pp. 86-100. [English summary].

II. Hedvall, E. (1937). Undersökningar rörande förekomsten av av typus bovinus förorsakad lungtuberkulos hos Skånes Befolkning. II. Nagra ord om en planerad undersökning av bovin tuberkulos, spec. lungtuberkulos i Skane. [**Pulmonary Tuberculosis Caused by Bovine Type Bacilli in the Population of Skåne. II. Bovine Type Tuberculosis in Man in Skåne**]. *Ibid.* 77-85. 2 tables. Discussion pp. 86-100. [English summary].

III. Plum, N. (1937). Human Tuberkulose hos Kvaeg. [**Human Type Tuberculosis in Cattle**].—*Maanedsskr. Dyrlaeg.* **48.** 609-627. 3 tables. [8 refs.]

I & II. An extensive investigation is being undertaken in Skåne to determine the frequency of bovine tuberculosis in man. P. called attention to the great facility with which cattle are infected by means of sputum from human beings affected with open pulmonary TB. of the bovine type. He describes some of his investigations. Infection from human sputum containing the human type bacilli makes cattle sensitive to tuberculin, but in most cases it is impossible to detect any pathological changes in the organs. H. drew attention to the risk of human beings becoming infected from tuberculous cattle. At the end he gives some technical details about the investigation.

In the discussion Magnusson points out that bovine TB. in Skåne is probably not so widespread as before. In 1913, 64% of all cattle slaughtered in Malmö city abattoirs were tuberculous. In 1934 the percentage was 30 in the Malmöhus district. The frequency of open TB. among the animals subject to TB. control in Malmöhus was 12% in 1914-1920 and 7-8% in 1935-1936. In 1911-1914 there were, on an average, 118 cases of udder TB. per year in Malmöhus. In 1929-1934 there were only 48 cases. In 1935 and 1936 5% of 564 samples of milk for sale contained virulent TB. bacilli. Magnusson related a case where a herd, which for a long time was negative to tuberculin, suddenly became positive. The source of infection was probably a tuberculous milker. Marcusson related two similar cases. Holm pointed out the great difference between the reaction to tuberculin of man on Bornholm and in the other parts of Denmark. On Bornholm only 1 in 5 of all human beings at the age of puberty reacted positively. In other parts of the country 3 in 4 gave a positive reaction. On Bornholm there is no bovine TB. and Holm suggested that this is the cause of the difference.

III. P. has studied the tuberculin test in cattle infected with the human type of the bacillus. In some cases the infection was due to contact with herdsmen affected with open pulmonary TB. of the human type, in others through ingestion of infected human sputum. After some time the infected animals were sensitive to tuberculin, both bovine and human. In the intradermal test there was no great difference between the reaction to each of the two kinds of tuberculin. The reaction was somewhat unstable ; in many cases rather weak, in others well marked. The skin in some cases increased 20 mm. in thickness. Autopsies were carried out on 9 cows and 7 calves. In only one cow were there any pathological-anatomical changes. In the mesenteric lymph nodes there were small tuberculous nodules containing human tubercle bacilli. In another cow P. cultured human bacilli from the tonsils and the mesenteric lymph nodes although the organs showed no pathological changes. The author did not succeed in culturing bacilli from the milk in either case.—H. Berthelsen (Stockholm).

Ballarati, A. (1936). Localizaciones de " tuberculosis bovina " observadas en cien casos motivo de comiso. [**Localization of Tuberculosis in 100 Argentine Cattle Examined for Meat Inspection**].—*Rev. Med. vet., B. Aires.* **18.** 317-323.

Of 100 carcasses confiscated on account of TB., 24 showed evidence of generalized TB. 18 of these were male animals and 6 female. 18 were carcasses of adults.

The remaining 76 confiscated were for localized lesions in 42 fore quarters and 51 hind quarters. 45 % were from male animals and 55 % from females. 70 were from adults.—J. A. Pasfield.

Guyonnet, E., & Drieux, H. (1937). Nouveaux cas de tuberculose ombilicale chez le veau. [**New Cases of Umbilical Tuberculosis in the Calf**].—*Rec. Méd. vét.* **113.** 273-278. 2 figs. [13 refs.]

Three cases of post-natal tuberculosis in calves, in which the umbilicus was the path of infection, are described. This type of case can be differentiated from those contracted through other routes by the presence of fibro-caseo-calcareous brownish-yellow nodules on the diaphragmatic portion of the peritoneum, together with discrete tuberculous lesions in the inguinal glands. The authors recommend protection of the navel of the new-born with an antiseptic dressing, isolation of calves and use of clean litter for prevention of umbilical infection with tubercle bacilli.—H. Burrow.

Arena, A. R. (1937). Dispersion du virus tuberculeux chez le chevreau infecté par la voie bronchiale. [**Dispersion of Tubercle Bacilli in Kids Infected by the Bronchial Route**].—*C. R. Soc. Biol. Paris.* **124.** 495-497. 1 table. [1 ref.]

When young goats were infected with a bovine strain of *Mycobact. tuberculosis*, by the bronchial route, infection first passed to the local lymph nodes, and from there to the blood stream.

Examination of a kid killed 27 days after infection showed that the blood was then free from the organism, but that both the liver and spleen were infected. —H. H. Holman.

de Mendonça Machado, A. (1936). Tuberculose bovina e suina em Portugal. [**Bovine and Porcine Tuberculosis in Portugal**].—*Bol. Pecuár. Portuguesa.* **4.** 159-165. 2 tables.

A few cattle that had reacted to the tuberculin test were examined P.M. Lesions were present. Some observations were also made on the existence of the infection in pigs. The work was of a routine nature. Some specimens sent for examination for suspected TB. in pigs proved to be due to a streptococcus or to *Corynebact. pyogenes suis.*—W. L. Marshall.

Lesné, E., Saenz, A., Salembiez, M., & Costil, L. (1936). Rôle du bacille bovin dans l'étiologie de la méningite tuberculeuse de l'enfant. [**The Part Played by Bovine Tubercle Bacillus in the Aetiology of Tuberculous Meningitis in Children**].—*Bull. Acad. Méd. Paris.* **116.** 373-382. 1 table. [11 refs.]

Anon. (1937). **Tuberculous Meningitis of Bovine Origin.**—*Brit. med. J.* Jan. 9th. 81. [1 ref.]

The bovine tubercle bacillus is as virulent for human beings as is the human strain, the role of the bovine tubercle bacillus in cases of tuberculous meningitis in children has been studied chiefly in England and Scandinavia where

raw milk and milk products are more commonly consumed. In America the bovine tubercle bacillus was found in 13·6% of cases of tuberculous meningitis in children, in Germany in 8·4% of cases, and in Scotland and Wales the number varied from 25·5% to 40%. In Scotland it was found in 5·5% of cases in children under 5 years of age and in 22% of cases in children between 5 and 15 years of age, while in Denmark the percentage in children under 5 years of age was 32·95%. The authors, in an attempt to solve the problem of the role of the bovine tubercle bacillus, studied, between the years 1932 and 1936, 138 cases of meningitis in children, of which 130 were tuberculous. Their method of demonstrating the bacillus was to culture cerebrospinal fluid from the cases on Löwenstein's medium. Of the 130 cases studied, 121 showed the presence of the human tubercle bacillus and 9 the bovine bacillus. It is claimed that this direct cultivation of the bacilli is quicker, less costly and easier than animal inoculation, while the results are quite as conclusive. The results were confirmed by animal inoculation. The investigation showed that all the children infected with the bovine bacillus had lived in the country and had been fed on raw milk, while only 10% of those affected with the human bacillus lived there, and in each of the latter cases there was a history of contact with human infection.

It is pointed out that as much as 10% of the milk supplies in Great Britain and Germany may be affected with bovine tubercle bacilli and that the milk products are similarly contaminated. The high incidence of tuberculosis of the udder in cattle is pointed out: statistics obtained at 8 French abattoirs during the years 1904-1908 showed that 4% of all tuberculous cattle condemned were affected with tuberculosis of the udder, while at the abattoir at Vincennes during the years 1905 to 1907, 0·4% of all cows slaughtered [including both tuberculous and non-tuberculous animals] were found to be affected with tuberculosis of the udder. The ideal prophylaxis suggested against tuberculous meningitis of bovine origin is pasteurization or boiling of all milk fed to children.—H. Burrow.

I. Tuchila, I. (1937). Recherche des bacilles paratuberculeux par la culture dans le sang des lapins normaux. [**Cultivation of Acid-Fast Bacilli from Blood of Healthy and Tuberculous Rabbits**].—*C. R. Soc. Biol. Paris.* **124.** 707-708. [1 ref.]

II. Moldovan, I., Turcu, T., & Crisan, C. (1936). Le " pneumotropisme " des bacilles acido-résistants. [**The Pneumotropism of Acid-Fast Bacilli**]. —*Ibid.* **123.** 208-210. 3 tables.

I. A propos of Schwabacher's finding of saprophytic acid-fast bacilli in the blood of normal rabbits [*V.B.* **4.** 412.], blood samples from 50 rabbits were sown on to tubes of Löwenstein's medium, with a negative result.

II. Even when injected into the left side of the heart, *Mycobact. tuberculosis* and other organisms of the acid-fast group were found at the P.M. examination of g. pigs to be concentrated in the lungs; Chinese ink, injected an hour later, was present to some degree in the lung but was mainly distributed in other organs. —H. H. Holman.

Oatway, W. H., & Steenken, W. (1936). **The Pathogenesis and Fate of Tubercle Produced by Dissociated Variants of Tubercle Bacilli.**—*J. infect. Dis.* **59.** 306-325. 4 tables. [Numerous refs.]

In this paper O. and S. describe the results of experiments on the virulence of dissociated colonies of H37 (human) and an avian strain respectively. The tests on H37 were undertaken in rabbits and g. pigs using different routes and graded doses, while the avian variants were tested intravenously in rabbits and

fowls. It was found that the extent of the disease was directly proportional to the virulence. The avirulent variants usually failed to induce macroscopic lesions, but microscopic examination revealed evidence of tubercle formation often in an arrested stage. The numbers of bacilli in direct smears were also proportionate to virulence. These results confirm previous observations that the production, development and type of healing of tubercles are strictly dependent upon the virulence of the variants, and that virulence is more important than other factors which may influence the course of experimental tuberculosis.

The authors suggest the following classification for variants of *Mycobact. tuberculosis* :

"The colonies of a strain are described as R (rough) or S (smooth), with the modifying term 'ch' to denote chromogenicity. Subscriptions are added to each to indicate the variant as being virulent (v) avirulent (a), or intermediate (in). Thus we have the H37, Ra and Rv variants ; the avian Rv, Sin, Scha, and Ra."—R. E. GLOVER.

SCHERAGO, M. (1937). **An Epizootic Septicaemia of Young Guinea-Pigs caused by Pseudomonas caviae n.sp.**—*J. infect. Dis.* **60.** 245-250.

A septicaemic condition in young g. pigs is described ; an organism resembling *Pseudomonas pyocyaneus* was isolated and found to be capable of reproducing the disease when inoculated parenterally but not when fed. The method of infection in the spontaneous disease could not be determined.—C. MCGAUGHEY.

SCHMIDT-HOENSDORF, E. (1937). Untersuchungen bei Backsteinblattern. [**Swine Erysipelas Skin Lesions**].—*Z. Fleisch- u. Milchhyg.* **47.** 254-256. [3 refs.]

The author considers that HEYCK [see *V. B.* **7.** 438.] is justified in his demands for a bacteriological examination of internal organs of pigs showing external lesions commonly associated with swine erysipelas. He states that between June, 1933 and December, 1934, the spleen and kidneys of 50 such pigs were culturally examined and that 34% gave a rich growth of *Erysipelothrix rhusiopathiae*.—M. BURKE.

I. BASSET, J. (1937). Vaccination du porc contre le rouget. La séro-infection, ou méthode lorenzienne de vaccination, ne nécessite, dans tous les cas, qu'une seule intervention. [**Vaccination against Swine Erysipelas**].—*Rev. Méd. vét., Toulouse.* **89.** 65-81. 4 figs. [2 refs.]

II. CORDIER G., & MÉNAGER, M. J. (1937). Septicémie des agneaux à bacille du rouget. [*Erysipelothrix rhusiopathiae* **Septicaemia in Lambs**].—*Rec. Méd. vét.* **113.** 215-221. 2 figs. [4 refs.]

III. WERNERY, H. (1937). Die Rotlaufgelenkentzundung der Schweine. [**Arthritis in S.E.**]—*Dtsch. tierärztl. Wschr.* **45.** 305-307. 3 figs. [11 refs.]

I. A general discussion on the "serum virus" method of vaccination in the course of which B. describes an experiment designed to show the value of this method. He used nine pigs of the same age and type, vaccinated six and left three as controls. Three weeks later he injected all with the same strain of organism. One of the controls died and the other two became ill while those vaccinated remained normal. The temperature charts are recorded and discussed.

The conclusion reached by B. is that this method is perfectly safe to use either as a precautionary measure before an outbreak of erysipelas or to prevent the spread of an outbreak by vaccinating the contact animals. In the latter cas he advocates the use of double the dose of serum.

II. Two lambs were sent to the authors' laboratory suffering from an acute illness. One died the next day the other after three weeks. The P.M. findings

and the clinical course of the disease (in the latter) are described. Cultures from the organs yielded an organism similar to the S.E. bacillus. Attempts made to reproduce the disease in lambs by the injection of cultures were not successful though a febrile reaction was obtained.

III. W. states that arthritis of the chronic villous type is common in pigs in the Munster district. He gives the clinical, histological and bacteriological findings, which show that *E. rhusiopathiae* is the causal organism. The bacillus is easily demonstrable in the joint fluids.—P. S. Watts.

Barry, W. C. (1937). **Arthritis in Lambs.**—*N. Z. J. Agric.* **55.** 10-13.

A description of arthritis in lambs due to *Erysipelothrix rhusiopathiae*, together with methods of control. It was stated that freezing works records show that 0·138% of lambs are affected when slaughtered, a total last year of about 12,000 lambs.—C. S. M. Hopkirk.

Deem, A. W., & Williams, G. L. (1936). **The Fermentation Reactions of Erysipelothrix rhusiopathiae.**—*J. Bact.* **32.** 303-306. 1 table. [5 refs.]

In view of the conflicting accounts given in the literature of the fermentation reactions of *E.r.* 37 strains were examined and it was found that only glucose, fructose, galactose and lactose were constantly fermented. Some of the strains produced slight acid in mannose, arabinose and xylose, but other carbohydrates remained unchanged.—F. Blakemore.

Andrieu, A., Quiroga, S. S., & Ezcurra, R. (1937). La septicemia hemorrágica de los bovinos en la Argentina. [**Haemorrhagic Septicaemia of Cattle in Argentina**].—*Rev. Med. vet., B. Aires.* **18.** 187-225. [1 ref.]

The authors reiterate the generally accepted theories concerning the role of organisms of the pasteurella group as secondary invaders, but add that in infected animals the organism may be found virulent in the medulla of bones up to eight days P.M. They do not consider haemorrhagic septicaemia a serious menace to the livestock industry in the Argentine.—J. A. Pasfield.

I. David, H. (1937). Zum Auftreten der Tularämie in Oesterreich. [**Tularaemia in Austria**].—*Wien. tierärztl. Mschr.* **24.** 65-73. [10 refs.]

II. David, H. (1937). Tularämie. [**Tularaemia in Austria**].—*Ibid.* 155-156.

III. Francis, E. (1937). **Sources of Infection and Seasonal Incidence of Tularaemia in Man.**—*Publ. Hlth Rep., Wash.* **52.** 103-113. 6 figs. on 2 plates, 1 table, 2 maps.

I. Tularaemia in human beings was first diagnosed in Austria in 1935. D. believes that it is much more wide-spread than would appear, but that it has not been generally diagnosed. Precautionary measures suggested by him include compulsory notification of all rodent epidemics ; examination of all rodents found dead during epidemics ; compulsory shooting of wild hares, ruthless extermination of wild rabbits, musk rats, rats and mice in affected areas, and enlightenment of the population.

II. About 100 cases of human infection have been observed in Austria. Infection occurred chiefly among those engaged in the skinning and dressing of wild hares, but in some cases it followed the consumption of diseased hares, which raises the question of making tularaemia of wild hares of significance in meat hygiene. There is every reason to believe that tularaemia has appeared in Czechoslovakia.

III. Seasonal incidence of tularaemia in the United States is due to the

seasonal variation of three sources of infection, namely :– tick bite, fly bite and the dressing of wild rabbits, but owing to the overlapping of these influences, cases have occurred in the U.S.A. in every month of the year. F. mentions numerous sources of infection.—M. Burke.

McBryde, C. N. (1937). **Pneumonia in Swine Resulting from Salmonella suipestifer Infection.**—*N. Amer. Vet.* **18.** No. 6. 41-47. 1 table. [7 refs.]

Heavy losses in young garbage-fed pigs were found to be due chiefly to infection *via* the intestine, resulting in pneumonia and enteritis. A table gives the pathological and bacteriological findings in 19 cases. *S. cholerae suis* was obtained in pure culture from the lungs of 7 out of 13 pigs showing lung lesions. The author reviews the literature and points out the rarity of recorded cases of pneumonia in swine due to *S. c.s.* He attributes the losses to a lowering of resistance caused by bad weather, bad housing and other unfavourable conditions.—E. E. Jelbart.

Mitchell, C. A., & Humphreys, F. A. (1937). **Studies Relative to the Permanency of Brucella abortus Infection.**—*Rep. vet. Dir. Gen. Dep. Agric. Can., 1936.* pp. 50-60. 3 tables. [1 ref.]

These studies are based upon serological tests of 227 cattle contained in 3 heavily infected herds. The tests were repeated at regular intervals over a period of 1-4 years and upwards and the resulting reactions are tabulated.

In calves, in the majority of cases, infection is transient as indicated by negative tests following a positive reaction. In mature cattle only 3% return from a positive to a consistently negative reaction, whereas approximately 25% fluctuate or alternate between positive and negative, and 50% continue as permanently positive. Accordingly, the permanency of infection in mature cattle, with few exceptions, is indicated.

The ages of immature reacting animals and the significance of fluctuating reactions in mature animals are discussed and stressed as points of importance in relation to permanent infection and control measures based thereon.—E. A. W.

Ridala, V. (1936). **Inquiries into the Pathogenic Effects Produced by *Brucella abortus* in the Udder and Certain Other Organs of the Cow.**—*Acta Univ. dorpat (tartu).* **31.** pp. 138. 1 text fig., 49 figs. on 26 plates, 31 tables. [Numerous refs.] [In English].

R. first examined about 40 cows with a high agglutination titre for *Br.a.* to find any having no bacteria other than *Br.a.* in their udders. Several such animals were found, but only six became available for a detailed study of the extent of brucella disease. Two of them were dry, but secretion from each quarter of the udder of all six animals was obtained for examination. This material and blood collected at slaughter were examined bacteriologically and serologically as a final check for other infections.

The following organs were examined for bacteria and pathological changes :– from cows 1 and 2 – the udder, the supramammary and deep inguinal lymph nodes, the ovaries and uterus ; from cow 3 – the above mentioned organs and the mesenteric lymph nodes ; from cows 5 and 6 – as from cow 3 plus the spleen, bone-marrow and the thyroid gland ; from cow 4 – all the above mentioned organs less bone-marrow, but with a superficial cervical lymph node, the lungs, the liver, the kidneys and the suprarenal glands.

Br.a. infection was distributed in this naturally infected group as follows :– Cow 1. Three quarters of the udder, both supramammary and both deep

inguinal lymph nodes. Cows 2 and 3. As 1, but in all quarters of the udder. Cow 4. As 2 and 3 and in the spleen and thyroid gland. Cow 5. As 2 and 3 and also in the spleen. Cow 6. In the right hind quarter of the udder and the right supramammary lymph node.

Full details of the histology of the lesions following serial sectioning of the organs, cultural examination results and g. pig inoculation tests are given. Tubercle lesions were found in the lungs of cow 4 and in the mesenteric lymph nodes, bone-marrow, uterus and both ovaries of cow 5. No bacteria other than *Br.a.* were found elsewhere.

Nine healthy control animals were submitted to a similar examination. No disease was determined in their blood, milk, udders, supramammary and deep inguinal lymph nodes, except that slight infiltrations by polymorphonuclear leucocytes were found in three of the udders.

R. describes the lesions produced by *Br.a.* in the udder as acute, subacute or chronic, the latter predominating. All these are fully described and extensively illustrated by photomicrographs. The outstanding findings in the udder and lymph nodes were foci of epithelioid cells often containing giant cells and surrounded by lymphocytes, plasma cells, a few fibroblasts, polynuclear leucocytes, single mast cells and connective tissue, all resembling early tubercle lesions except that necrosis was less evident and caseation did not occur. Cornification of the epithelium of lactiferous ducts was also noted, and obstruction produced by this and other chronic changes often led to retention cysts, especially in the less well drained parts of the udder.

R. considers that infection starts in the parenchyma of the udder, spreading thence to the interlobular connective tissue. The lactiferous ducts are also probably infected by milk produced in the diseased alveoli. He estimates that from 25% to 83% of the udder tissue may be involved in this disease.

He evolved a modified Giemsa method to differentiate *Br.a.* in sections, by which the bacilli stain pale-blue or pale violet-blue (Gram + bacteria stain dark blue), the cell nuclei being dark blue and the protoplasm red. The bacteria in stained sections resemble the coccoid forms seen in old cultures. Some of the udder sections, which are illustrated, point to a spread of infection *via* the blood stream.

A slight increase in milk yield may be the first sign of udder infection. Infection of the non-pregnant uterus may persist for almost one year.—C. V. W.

I. Norway. (1937). Foreløbig meddelese fra Veterinaerdirektøren om resultatet av bekjempelsen av smittsom kastning pr 31/12, 1936. [**Results of Campaign against Bovine Brucellosis in Norway in 1936**].—*Norsk VetTidsskr.* **49.** 17-20. 2 figs., 1 table.

II. Petersen, G. (1937). Om Bekaempelsen af smitsom Kastning hos Kvaeget. [**Control of Bovine Brucellosis**].—*Medlemsbl. danske Dyrlaegeforen.* **20.** 109-119. [1 ref.]

I. Systematic control of bovine brucellosis has now continued in Norway for 2 years. 2,741 herds have been reported as infected. By the end of 1936, 2,073 of the herds (75·6%) were regarded as free from the disease and in 343 herds (12·7%) no animals gave a positive reaction at the last test. At the present time there are 321 infected herds in the whole country or 11·7% of all herds originally infected.

II. A survey of the measures which are proposed to control brucellosis in cattle in Denmark. In recently infected herds the sick animals should be isolated or slaughtered. In herds where the infection is of longer standing general hygienic

measures and vaccination are the best weapons. When it is considered suitable a herd should be divided into two parts – one which is infected and one which is not.—H. BERTHELSEN (STOCKHOLM).

I. KATELE, V. (1937). Kovos su bruceloze klausimu Lietuvoje. [**Control of Brucellosis in Lithuania**].—*Vet. ir Zootech., Kovno.* **14.** 33-38.

II. PABIJANSKAS, A. (1937). Apie bruzeloze ir kova su ja Lietuvoje. [**Control of Brucellosis in Lithuania**].—*Ibid.* 65-76. 1 table. [Numerous refs.]

I. Farmers have shown little interest in the control of bovine brucellosis except when the disease has had an effect on the export trade in livestock. The disease has spread among cattle by means of the common pastures, by working cattle moving from place to place and by market cattle, etc. There is no law regulating the sale of affected beasts, and sellers have no legal liability in respect to their stock. A law regulating animal sales is necessary.

II. A brief review of the recent literature on brucellosis and an account of its incidence and control in Lithuania. Before 1937 no systematic investigations into it were made and only selected herds have been examined.—A. P. (KAUNAS).

SIMIĆ, T., & DJURIŠIĆ, M. (1936). Nalaz pozitivne aglutinacije u krvi inokuliranih zamorčadi kao dokaz postojanja Brucela bakterija u mleku obolelih krava. [**The Biological Test for Brucella in Milk**].—*Jugoslov. vet. Glasn.* **16.** 616-617. 1 table. [5 refs.] [French summary].

Details are given of the results of inoculating g. pigs with brucella-infected milk.

DAVIS, C. L. (1937). **A Clinical Case of Brucellosis in a Dog.**—*N. Amer. Vet.* **18.** No. 6. 48-50. 1 fig. [4 refs.]

Diagnosis was based on clinical symptoms and the aggl. test. A titre of 1 : 2,000 was obtained by the tube method. As malignancy was first suspected, a slightly enlarged testicle was removed and was found to contain an abscess. Cultures from this abscess failed to reveal any bacterial growth, but unfortunately no attempt was made to culture the tissue in a CO_2 atmosphere. A g. pig was inoculated (subcut.) and examination was made six weeks later. The serum of the g. pig was positive in 1 : 25 dilution but brucella organisms could not be obtained by culture from spleen in a CO_2 atmosphere.—S. J. GILBERT.

SCHIEL, O. (1936). Abortus-Bang- Bakteriennachweis im Hoden eines Rehbockes. [*Brucella abortus* **in the Testicle of a Roebuck**].—*Z. Fleisch- u. Milchhyg.* **47.** 114-116. [9 refs.]

Br.a. was found in both testicles of a roebuck. In the district where the roebuck was shot there had been an increase of sterility in the does and of stunted horns in the bucks. It is suggested that *Br.a.* was the cause.—G. H. (VIENNA).

I. STEVENIN, G. (1937). Trois cas de microsporie humaine d'origine animale. [**Microsporon Ringworm of Animal Origin in Man**].—*Rec. Méd. vét.* **113.** 149-151.

II. CATANEI, A. (1936). Sur la résistance des champignons des teignes dans le milieu extérieur. [**Viability of the Ringworm Fungus**].—*C. R. Soc. Biol. Paris.* **123.** 1043-1044. [3 refs.]

I. The people affected were three veterinary students and it is presumed that the source of infection was skin scraping material from a cat submitted for examination. The lesions on the arms and neck were dry and scaly. They

varied in size up to a centimetre in diameter. Mycelia and spores were demonstrated and cultures were made.

II. A g. pig with a scarified area on the back contracted ringworm on the scarified area when placed in a cage which had 19 months previously housed infected animals.

It is shown that the fungi may remain alive in laboratory conditions for a period of up to three years.—J. W. H. Holmes.

Mason, J. H. (1936). **The Isolation of Single Bacterial Cells.**—*Onderstepoort J. vet. Sci.* **7.** 133-141. [12 refs.]

A description is given of the author's technique, wherein certain technical modifications have been introduced which are a definite improvement on those described in the Barber technique. The Zeiss micro-manipulator was used and for the drawing of the micro-pipettes a special apparatus, electrically heated, was used. In the making of single cell cultures from anaerobes, M. describes the technique devised by him, making use of the Fortner plate. It was found that with organisms of the *Clostridium welchii* type a high percentage of the isolated bacteria grew, whereas with delicate organisms of the *Cl. chauvoei* type, only about 1% of the organisms grew in the plates.

DISEASES CAUSED BY PROTOZOAN PARASITES.

Chen, T. T. (1937). **A Method for Preserving and Shipping Smears of Protozoa.** —*J. Parasit.* **23.** 112-113. 1 fig.

Smears were made on No. 1, round, 22 mm. diameter cover-slips, fixed, washed and dehydrated up to 70% alcohol. Two cardboard rings (outside diameter 22 mm. and inside diameter 19 mm.) were placed at the bottom of a cylindrical vial (inside diameter 24 mm. and height 50 mm.) which was partly filled with 70% alcohol. 20 to 25 cover-slips with the smears downwards were placed separately in the vial with one cardboard ring between each to prevent crushing of the protozoa. The vial was then filled with 70% alcohol, the label placed inside, and then a wad of wool to prevent displacement of the contents. The vial was tightly corked and sealed with paraffin.—C. V. Watkins.

Galuzo, I. G., Četaev, I. A., & Bespalov, V. M. (1935). Kroveparaziti krupnogo rogatogo skota v. gissarskoj doline i bolezni, vizivaemie imi. [**Blood-parasites of Cattle in the Hissar Valley and Diseases Caused by Them**].— *Trud. Tadzikst. Bazi Akad. Nauk, SSSR.* **5.** 167-185. 9 figs., 2 tables.

The authors studied bovine piroplasmoses (*Babesia bigemina*, *Françaiella colchica*, *Fr. caucasica* and *Theileria annulata*) on the Hissar collective dairy farm [Hissar is about 100 miles due north from the northern frontier of Afghanistan]. The infections appeared on the farm in April, 1933 and losses continued until late autumn. The authors found that young stock was similarly affected to adult stock. During the summer 20 cases of *B. bigemina* infection occurred, and 437 cases in which one or more of the other infections were found.

Among cases with *Fr. colchica* and *Fr. caucasica* infections a very acute form was seen, which sometimes caused death in two or three hours.

160 head of cattle on the farm were affected by *Th. annulata*.

Bevan, L. E. W. (1937). **Progress Report on Research in Trypanosomiasis in Southern Rhodesia.**—*Rep. S. Rhod. Tryp. Comm. & Bur.* pp. 19-21.

This section of the report gives the main conclusions reached in regard to the work at present in hand and the progress recently made. It stresses the same points as have been raised in recent articles by Bevan [*V. B.* **7.** 217, 271 & 374.], but adds that " tolerance " against *Tryp. pecorum* [*Tryp. congolense*] can be set up by antimony treatment, which is insufficient to produce sterilization, but for " tolerance " to be maintained, reinfection by fly or syringe must occur.—U. F. R.

Southern Rhodesia. (1937). **Report on the Southern Rhodesia Trypanosomiasis Committee and Bureau.** pp. 22. 1 map. [fcp] [Mimeographed].

An introduction to this report briefly sketches the importance of trypanosomiasis to Southern Rhodesia, emphasizing the danger to human life of sleeping sickness, the hindrance to development caused by animal trypanosomiasis, the danger of the extension of tsetse fly to areas at present free from them, and the expense of tsetse fly control on which the Rhodesian government has spent £60,000 in the last ten years. As a result of the appreciation by the Prime Minister of the necessity for co-operation in research between members of the various sciences involved, a trypanosomiasis committee was formed in 1934, consisting of representatives of the medical, veterinary, agricultural, entomological, chemical and geological sciences. A bureau was also formed for " the collection, collation, and distribution of information concerning the trypanosomiases of man and animals in Southern Rhodesia and other parts of the world ". No funds were placed at the disposal either of the committee or the bureau.—U. F. Richardson.

Anon. (1937). **Trypanosomiasis Research. Proposed Scheme for Cooperation in Research between the Territories of Southern and Northern Rhodesia and Nyasaland.**—*Rep. S. Rhod. Tryp. Comm. & Bur.* pp. 15-18.

In order to co-ordinate the efforts of the various governments concerned it was suggested that a Director of Trypanosomiasis Research should be appointed and that medical, veterinary, entomological, chemical and ecological specialists should be appointed to assist him, and that a research station should be provided where chemotherapeutic investigations could be undertaken. It was suggested that funds should be contributed equally by the governments of Southern Rhodesia, Northern Rhodesia and Nyasaland. This scheme was not accepted by the governors of the three territories in conference, though they endorsed the view that co-operation between the three countries was desirable. The scheme was therefore abandoned, but in the meantime the nucleus of a research station has been formed.—U. F. Richardson.

Anon. (1937). **Report of the Southern Rhodesia Trypanosomiasis Committee on the Policy of Game Destruction as a Means of Controlling the Tsetse Fly (G. morsitans).**—*Rep. S. Rhod. Tryp. Comm. & Bur.* pp. 8-12.

The Committee point out that the system of fencing and game destruction was adopted as an emergency measure, and that it has been relatively successful in holding the fly in check and, in some areas, in pushing it back from country into which it had encroached. Outbreaks of animal trypanosomiasis have, however, occurred on farms which have been free from tsetse fly for some time, and it was suggested that these outbreaks might be due to " fly " following natives, and that steps should be taken to reduce such a danger. The committee considered that the present system of controlled slaughter of game, together with adequate fencing and control of traffic, should continue until an effective alternative should be forthcoming, but they urged that provision should be made for research into the bionomics of the tsetse fly and into the diseases transmitted by it. It was also

pointed out that though such research was being carried out in other countries, yet for economic or climatic reasons methods of control suitable in one area might be inapplicable in another.—U. F. Richardson.

Hoare, C. A., & Bennett, S. C. J. (1937). **Morphological and Taxonomic Studies on Mammalian Trypanosomes. III. Spontaneous Occurrence of Strains of *Trypanosoma evansi* Devoid of the Kinetonucleus.**—*Parasitology.* **29.** 43-56. 7 figs., 1 table, 1 map. [Numerous refs.] [See also *V. B.* **6.** 860].

Three strains of *Tryp. evansi* were encountered in camels in the Sudan in which 97%-99% of the individual organisms were devoid of a kinetonucleus. These strains occurred in widely separated areas. It is stated that such akinetonuclear forms are very rare in *Tryp. vivax* and *Tryp. congolense*, but may reach 10% in *Tryp. brucei*. They are very rare in *Tryp. hippicum* of North America, may be present in 10-30% of *Tryp. venezuelense* of Venezuela, and up to 100% in *Tryp. equinum* of South America. There appears to be no such graduation in the Sudan. The origin of such strains is discussed, and it is suggested that they arise by irregular division, in which the kinetonucleus fails to divide, so that one daughter organism is devoid of this structure.—U. F. Richardson.

Duke, H. L. (1937). **Studies of the Effect on *T. gambiense* and *T. rhodesiense* of Prolonged Maintenance in Mammals other than Man; with Special Reference to the Power of these Trypanosomes to Infect Man. V. The Effect of Prolonged Maintenance away from Man on the Infectivity of *T. rhodesiense* for Man. VI. Strain " Kahondra " from Southern Rhodesia, and Concluding Observations on this Series of Papers.**—*Parasitology.* **29.** 12-34 and 35-42. 2 tables. [18 refs.] [See also *V.B.* **7.** 215].

V. Records observations on the effect of maintenance in game and domestic animals of five strains of *Tryp. rhodesiense*. The trypanosome may survive in antelopes for at least two and a half years in a form transmissible by tsetse, but strains differ in their adaptability to antelopes, and some antelopes (bushbuck and reedbuck) seem to be more suitable for maintenance than others.

Human beings were more readily infected with blood forms of the trypanosomes than with the forms developing in tsetse, and were also more readily infected from subinoculated laboratory animals or monkeys than from the antelope itself. Prolonged maintenance in g. pigs was found on several occasions to impair the infectivity for man. When a strain dies out in an antelope the animal becomes susceptible to reinfection. Reinfection strains in a bushbuck proved incapable of infecting man, but reinfection strains in a reedbuck succeeded. A spotted hyaena supported an infection with *Tryp. rhodesiense* for 22 months, which contrasts with the susceptibility of domestic carnivores. This strain passed through monkeys 569 days after first infection of the hyaena still proved infective to man. One strain still proved infective to man after maintenance in an ox for 294 days followed by passage through a monkey.

VI. Records observations on a strain of trypanosome isolated from a man in one of the old tsetse " residual foci " of Rhodesia. The strain was more resistant to arsenicals than normal *Tryp. gambiense*, but posterior nuclear forms were rarely encountered. When first isolated it was only moderately virulent to laboratory animals, but the virulence increased with passage. Though this strain approaches *Tryp. gambiense* in some of its characters, it is considered to be *Tryp. rhodesiense*, and not to provide evidence of the descent of *Tryp. rhodesiense* from *Tryp. gambiense*. A human volunteer was infected with this strain after a long series of passages through laboratory animals.—U. F. Richardson.

Morrell, C. A., Chapman, C. W., & Allmark, M. G. (1937). **A Study of the Effect of Age, Weight, Sex and Dose on the Length of Survival of Albino Rats Infected with *Trypanosoma equiperdum* with Particular Reference to Variations in the Host.**—*Amer. J. Hyg.* **25.** 232-258. 9 figs., 6 tables. [15 refs.]

About 2,000 rats were used in these experiments, thus allowing of a statistical analysis of results. The survival time was found to be influenced considerably by individual variations in the resistance of the hosts, but this could to some extent be eliminated by giving a dose of 2,000,000 or more organisms. Increasing the dose of organisms considerably shortened the survival time and, while the mean survival period after a dose of 350,000 organisms was 110·1 hours ± 20·1 hours, after a dose of 10,000,000 organisms it was 81·7 ± 20·7 hours. There was some evidence that a more virulent strain of trypanosome was less susceptible to variations in individual resistance. Young rats showed greater individual variations in survival time than did adult rats. The hosts exerted little or no resistance to infection with the doses used, and throughout the greater part of the course of the disease the number of organisms in the blood increased in geometrical progression. Neither age nor weight appeared to be correlated with the period of survival, but males survived longer than females. Both males and females died at a point when the blood infection was 1,400,000 trypanosomes per c.c. of blood, regardless of the dose injected, and it is suggested that the difference of male and female survival depends upon a difference in the volume of the blood.—U. F. Richardson.

Gowe, D. F. (1937). **Observations on the Relationship between the Leucocyte Picture and the Crisis in the Parasite Number in Experimental Trypanosomiasis.**—*Amer. J. trop. Med.* **17.** 401-405. 2 charts. [5 refs.]

Rabbits show some resistance to *Tryp. brucei* infection in that about ten days after infection a crisis occurs with partial recovery, followed by a relapse four days later. Preceding the crisis there is an increase in the leucocyte count, a decrease in the percentage of polynuclear leucocytes, with a slight increase in lymphocytes and a marked increase in the monocytes. During the relapse, when resistance is lost, and in rats which exhibit no resistance, there is an increase of polynuclear leucocytes at the expense of the lymphocytes, and no monocytic response.—U. F. Richardson.

I. Patel, C. (1936). Ueber die physikalische und chemische Beeinflusbarkeit von Trypanosomen im Hinblick auf das Vorkommen abgeschwächter Erregerstämme. [**Attempt to Attenuate Trypanosomes by Physical and Chemical Means**]. *Z. ImmunForsch.* **89.** 325-361. 2 figs., 21 tables. [Numerous refs.]

II. Bessemans, A., & Janssens, P. (1936). Essais complémentaires sur l'évolution, chez le cobaye, d'une trypanosomiase arsénoresistante soumise à l'influence magnétique des ondes courtes. [**The Effect of Short Wave Irradiation on Arsenic-Resistant Trypanosomes**]. *Ann. Soc. belge Méd. trop.* **16.** 447-455. 4 diagrams. [5 refs.]

III. Launoy, L. (1937). Chimio-resistance de T. annamense à la suite d'une seule injection massive de tryparsamide à un chat infecté. [**Resistance of *Tryp. annamense* to a Large Single Injection of Tryparsamide in a Cat**].—*Bull. Soc. Path. exot.* **30.** 284-286.

I. Observations are recorded on the action of various light rays, physical conditions and chemical drugs on *Tryp. brucei* in saline suspensions, with a view to modifying the pathogenicity of the trypanosome. Exposure to Röntgen rays,

ultra-violet light, sunlight or thorium X might cause loss of infectivity to trypanosome suspensions without causing loss of motility, but as long as infectivity was retained these rays appeared to have little influence on the pathogenicity. In some cases there was a slight lengthening of the incubation and survival periods of animals inoculated with irradiated suspensions, but they could not be considered significant.

The trypanosomes were killed by a temperature of 37°C. in 30 minutes, but might retain their infectivity at 0°C. for one and half hours or more, infectivity being lost before motility. They were able to survive in saline solutions varying from 0·2 to 5% for 30 minutes and retain both motility and infectivity.

An electric current of one milliampere killed them in 10 minutes.

Subcurative treatment with "neosalvarsan" and "parafuchsin" did not produce avirulent strains, except for one strain obtained from the brain of a rabbit treated with "parafuchsin". This strain seemed to exhibit some loss of virulence which it retained through a limited number of passages. No satisfactory means of producing an avirulent strain was discovered, the trypanosomes were either killed by the method employed or retained their virulence.

II. G. pigs infected with an arsenic-resistant strain of *Tryp. gambiense* were submitted to three different forms of short wave irradiation. The treatment did not influence the course of the infection, and, when combined with "tryponarsyl" treatment, did not overcome the arsenic-resistance of the organisms.

III. After treatment of a cat infected with *Tryp. annamense* [*Tryp. evansi*] with 50 cg. "tryparsamide" per kg. weight, the peripheral blood was cleared of trypanosomes and remained free for three months, when a relapse occurred. The relapse strain, when inoculated into mice and g. pigs, not only proved resistant to "tryparsamide", but also showed increased resistance to "acriflavine" and "moranyl 205".—U. F. Richardson.

Lourie, E. M., & O'Connor, R. J. (1936). **The Dissociation of Antibody from Sensitized Trypanosomes.** - *Ann. trop. Med. Parasit.* **30.** 541-544. 1 table. [1 ref.]

It had been shown that trypanolysis occurred in one and a half hours, if trypanosomes (*Tryp. rhodesiense*) were sensitized, washed, and complement was then added, or in 10-18 hours if the organisms were exposed to immune serum in the absence of complement. If sensitized trypanosomes were washed, exposed to inactivated sera at 37°C. for one hour, and complement was then added, no trypanolysis occurred. This is explained by assuming that the antibody had diffused into the inactivated serum. The maximum dissociation measurable by the technique employed had occurred after one hour at 37°C., but this point had not been reached after 12 hours exposure at room temperature.—U. F. Richardson.

Carrieu, Rambault, Venel, & Harant. (1935). La leishmaniose canine dans la région de Montpellier. [**Canine Leishmaniasis in the Montpellier District**].—*Arch. Soc. Sci. méd. biol. Montpellier.* **16.** 194-200. [4 refs.] [Abst. from abst. in *Bull. Inst. Pasteur.* **34.** 1083].

Twelve out of 19 dogs suspected of leishmaniasis reacted positively to the formol-gel test, and 5 of these gave a positive complement-fixation reaction. At P.M. examination of 10 of these dogs, leishmania were found only twice and then in animals in which the above two reactions were positive.

Only one case of infantile leishmaniasis has been recorded in this area.
—F. H. Manley.

ESTRADA, A. (1936). Les leishmanies peuvent se multiplier par schizogonie. [**Multiplication of Leishmania by Schizogony**].—*Bull. Soc. Path. exot.* **29.** 722-726. 1 fig. [2 refs.]

Examination of splenic pulp from cases of infantile kala azar revealed leishmania organisms of various forms : some were elliptical and some rounded, but all were constructed on essentially the same plan. *L. donovani*, *L. tropica*, and *L. infantum* consist of slightly basophile cytoplasm and a thin membrane ; a round or oval macronucleus [trophic nucleus] which is usually situated in the centre, or sometimes at the poles of the organism. The position of the micronucleus [kinetonucleus] showed considerable variation. The varying situations of the micronuclei and the number of these and of macronuclei led to the belief that the observed forms constituted phases in the multiplicative cycle and E. concludes that *Leishmania* in man reproduces itself in two ways :- (1) by binary, longitudinal fission similar to that of trypanosomes, and (2) by multiple schizogony comparable to that of the blood-cycle of *Laverania*.—C. HORTON-SMITH.

I. MANWELL, R. D., & HEWITT, R. I. (1937). **Experiments in the Cultivation of the Avian Malaria Parasites.**—*Amer. J. trop. Med.* **17.** 407-412. [11 refs.]

II. SERGENT, ET. (1937). Durée de l'incubation du paludisme aviaire (à Plasmodium relictum) et syzygies. [**Duration of Incubation in Avian Malaria**].—*Arch. Inst. Pasteur Algér.* **15.** 8-10. 1 fig. [2 refs.]

I. Satisfactory cultivation of malaria parasites is of extreme importance in the diagnosis of carriers and the investigation of problems concerned with immunity, chemotherapy, etc. The appreciation of the importance led to the series of experiments described in this paper. Most of the work was conducted with a strain of *Plasmodium praecox* (*relictum*) as it provided uniformly heavy infections. As relatively small quantities of blood could be used, and as the risk of bacterial contamination was lessened, incubation at 25°C. was carried out in drawn-out capillary tubes which were sealed after the blood had been drawn into them. Higher temperatures caused rapid haemolysis of the red cells and destroyed the parasites. The cultures thus obtained were of normal appearance but of diminished viability although infection was produced in a fresh bird from a five-day old culture after an extended incubation period. The most efficient anti-coagulant was found to be heparin which proved harmless to the parasites and made dilution unnecessary. It is evident that much more work along these lines will be necessary before a reliable working method of cultivation is evolved.

II. Life-cycles of experimentally introduced bird malarian parasites of the same stock were studied for a period of 28 years in 1,260 canaries. The duration of incubation averaged six days but varied from two to 15 days. These variations depended on the state of the moon, *i.e.*, whether new or full. The results showed that the times of incubation averaged 5 days 21 hours in 365 cases for the first quarter of the moon, and 6 days 4 hours in 288 cases for the full moon. Duration of incubation was greater when inoculation was made at other quarters of the moon : 6 days 19 hours in 276 cases for the new moon, and 6 days 19 hours in 331 cases for the last quarter. The shortest time of 5 days and 21 hours was taken when the inoculation was made between the first quarter and the full moon instead of 6 days 4 hours, 6 days 19 hours, and 6 days 19 hours for the other three quarters.
—C. HORTON-SMITH.

ZSCHUCKE, J. (1936). Vergleichende Untersuchungen über experimentelle Trypanosomiasis nach Impfung ins Blut oder in den Liquor cerebro-

spinalis. [**Experimental Infection with Trypanosomes *via* the Blood or Cerebrospinal Fluid**]. —*Z. Hyg. InfektKr.* **118.** 615-622. 2 tables. [6 refs.]

In order to assess the importance of trypanosome infection of the cerebrospinal fluid, Z. compared the reaction produced by inoculation of organisms into the blood stream and into the spinal fluid in cats infected with *Tryp. brucei* and *Tryp. congolense*, in dogs infected with *Tryp. congolense*, and in rabbits inoculated with *Tryp. gambiense*. There was no marked difference in the time before the trypanosomes appeared in the peripheral blood, the survival period, the cell content or the gold reaction of the cerebrospinal fluid, but the number of animals developing nervous symptoms was greater with intrathecal inoculation than with intravenous.—U. F. Richardson.

I. Pascal. (1937). Un cas de piroplasmose équine due à Piroplasmum caballum. [*Babesia caballi* **in a Horse in Arles, France**]. *Bull. Soc. vét. prat. Fr.* **21.** 33-34.

II. Potschetschueff, K. N. (1937). Zur Frage der Pferdenuttalliose. [*Babesia equi* **Infection**].—*Z. InfektKr. Haustiere.* **50.** 298-301. 4 figs.

I. Records a case of *B. caballi* infection in a horse more than 20 years old at Arles in France. P. was unable to detect tick infestation, but tabanids and other biting flies were numerous.

II. Records the detection of *B. equi* infection in a horse which died at Kieff. It is suggested that the transmitter might be *Dermacentor silvarum*. *B. caballi* is known to be prevalent in this area.—U. F. Richardson.

Schmidt, H. (1937). **Anaplasmosis in Cattle.** *J. Amer. vet. med. Ass.* **90.** 723-736. 2 figs., 3 tables. [8 refs.]

A brief review of the history and existing knowledge of anaplasmosis, giving the author's experiences in immunizing hundreds of cattle over a period of many years against Texas fever (piroplasmosis and anaplasmosis). S. questions the conclusions of Helm and of Veglia as to the length of time that organisms will live in blood drawn from a carrier. In a series of 23 animals he found that at room temperature [no details are given as to conditions, pH, atmosphere, etc.] *B. bigemina* lived 4, but not 7, days while *A. marginale* lived 9, but not 10 days. At ice-box temperature *B. bigemina* lived 10 days but not 12 days, whilst *A. marginale* lived 11, but not 12, days. Reference is made to the problem of the carrier. S. never found *A. centrale* in Texas and was never able to transmit bovine anaplasmosis through sheep.—E. E. Jelbart.

Monteverde, G. (1937). Anaplasmosi nei camelli in Cirenaica. [**Anaplasmosis in Camels in Cirenaica, Libya**]. *Clin. vet., Milano.* **60.** 73-76. 2 text figs., 5 figs. on 2 plates.

M. enquired into the increasing mortality amongst camels in the Oasis of Kufra. On microscopic examination he found anaplasms in the blood. He compared the blood of healthy, with that of affected camels, the latter having all come up from the coast where M. believes the disease was contracted. He considers that the affection is transmitted by *Hyalomma dromedari* of which he gives a plate. He also shows plates of his microscope slides. S. F. J. Hodgman.

DISEASES CAUSED BY VIRUSES.

Köbe, K. (1937). Durch Virusarten hervorgerufene Zoonesen. [**Virus Diseases Transmissible from Animals to Man**]. *Arch. wiss. prakt. Tierheilk.* **71.** 245-253. [19 refs.]

K. describes the virus diseases transmissible from animals to man, including foot and mouth disease and cow pox from cattle, psittacosis – from parrots, finches and gallinaceous birds, rabies – from dogs, wolves and foxes, "louping ill" – from sheep, infectious anaemia – from horses, and infectious meningitis – from mice.
—G. HARTMANN (VIENNA).

MCINTOSH, J., & SELBIE, F. R. (1937). **The Measurement of the Size of Viruses by High-Speed Centrifugalization.**—*Brit. J. exp. Path.* **18.** 162-174. 11 figs., 1 plate, 2 tables. [14 refs.]

A detailed description is given of the construction of an air-driven centrifuge capable of speeds of over 60,000 r.p.m. This machine works on the principle of a turbine; it is without bearings and, consequently, it runs without vibration and at a constant temperature.

Observations have been made upon the sedimentation times of different viruses and bacteria with the object of estimating their actual size. By plotting the initial and final concentrations of the material to be examined against time a "sedimentation angle" is obtained on the chart. The size of the particles is proportional to the square root of the tangent of that angle. ($D = K \times \sqrt{\tan\theta}$, where K is a constant which varies with the speed of the centrifuge and θ is the angle of sedimentation).

The density of bacteria and viruses may be estimated by spinning them in fluids of different specific gravity. Potassium iodide is used for spores and bacteria and a glucose solution for viruses; this has the disadvantage of a high viscosity. The lethal effect of potassium iodide for spores is greatly enhanced by spinning.
—E. C. HULSE.

AMIES, C. R. (1937). **The Particulate Nature of Avian Sarcoma Agents.**—*J. Path. Bact.* **44.** 141-166. 6 tables. [Numerous refs.]

The tumour-exciting agents of avian sarcomata may be precipitated by high-speed centrifugation. Protein-free suspensions are prepared which are agglutinated by the sera of fowls bearing a tumour of the same type. The microscopic particles in these suspensions are thought to be similar to virus elementary bodies.

Agglutinins for the tumour agents are often demonstrable in the serum of normal adult fowls. Neutralizing antibodies are found in sera showing a strongly positive aggl. reaction.—E. C. HULSE.

DEUTSCH, Valérie. (1936). Sur la purification des ultravirus. [**Purification of Viruses**].—*C. R. Soc. Biol. Paris.* **122.** 529-532. [11 refs.]

D. has been unable to repeat the findings of SATO and KODAMA [(1931). *Kitasato Arch.* **8.** 287.] on the absorption and elution of vaccine virus by means of kaolin, using phosphate buffers of different pH values, but has confirmed KLIGLER'S observation [(1934). *Proc. Soc. exp. Biol., N.Y.* **32.** 222.] that elution takes place when a N/200 solution of ammonia is used. Chemical analysis has shown, however, that there is no real "purification" of viruses by these means, since the coefficient of protein to virus content is not materially altered in the eluate when compared with the original solution.—R. E. GLOVER.

GOODPASTURE, E. W. (1936). **Immunity to Virus Diseases.**—*Amer. J. publ. Hlth.* **26.** 1163-1167. [8 refs.]

G. suggests that viruses may be defined as cytotropic agents in that they resemble the obligatory intracellular parasites.

A comparison is drawn between the mechanism of immunity to extracellular

bacteria in the body fluids and the action of a virus within the living cells. The virus may undergo phagocytosis, or a specific antibody in the serum may prevent the virus from entering susceptible cells. Liberation of the virus by division of infected cells may give rise to a latent infection. The virus inside living cells may be protected from circulating antibodies, and thus the introduction of immune serum may be ineffective. A neurotropic virus may progress along the cytoplasmic processes of the nerve cells without exposing itself to the extracellular environment. —E. C. Hulse.

Webster, L. T. (1937). **Inheritance of Resistance of Mice to Enteric Bacterial and Neurotropic Virus Infections.**—*J. exp. Med.* **65.** 261-286. 1 fig., 10 tables. [21 refs.]

By repeated selection from generation to generation, strains of mice have been established which show a high or low resistance to infection with *Bact. enteritidis* or to the mouse encephalitis virus respectively. This degree of resistance is found to be a hereditary factor.

Individuals were selected from litters which showed a certain degree of susceptibility to a standard test dose and three lines were established which were regarded as being relatively stable. The three lines were :– (1) bacteria-susceptible-virus-susceptible; (2) bacteria-susceptible-virus-resistant, and (3) bacteria-resistant-virus-susceptible mice.

Cross-breeding tests of these three lines showed that resistance to infection was controlled by inherited factors and that resistance was dominant over susceptibility.

All lines were found to be uniformly susceptible to a strain of mouse passage rabies virus.—E. C. Hulse.

Kelser, R. A., & King, L. S. (1936). **Studies of a Paralysis Syndrome Produced in Rabbits and Guinea Pigs by Extracts of Normal Primate Bone Marrow.** —*Amer. J. Path.* **12.** 317-332. 5 figs. on 2 plates. [9 refs.]

The observations of Friedemann [*V. B.* **4.** 768.] are confirmed *viz* that normal bone marrow contains an agent which induces paralysis in rabbits following intrathecal or intracerebral inoculations. The condition can also be produced in the g. pig.

It is suggested that the factor is not a virus since it proved impossible to transfer the condition from the brains of affected to normal animals : moreover, cerebral tissue containing known viruses, *e.g.* St. Louis encephalitis, equine encephalomyelitis etc., were completely inactivated by the treatment used in the preparation of the extracts. When mixed with viruses, the agent failed to render the former pathogenic for animals which are ordinarily insusceptible, *e.g.* St. Louis encephalitis in the g. pig. The authors agree with Friedemann that the activating product is a ferment similar to that described by Jochmann and Lockemann which is present in bone-marrow, spleen and lymph nodes. It was lethal only for heterologous species, while normal serum failed to effect any neutralization.

The pathological findings are discussed. The changes involved mainly the cerebellum, with severe and wide-spread injury to the cells of Purkinje, but less marked infiltrative changes were also observed. It is suggested that the symptoms in affected animals do not arise directly from the visible lesions but from some unknown functional involvement of the nervous system.—R. E. Glover.

Curasson, G. (1936). Sur les méthodes d'immunisation à employer contre la peste et la péripneumonie bovines. [**Immunization against Rinderpest**

and Contagious Bovine Pleuro-Pneumonia].—*Conf. consult. Elevage Afrique occ. française.* pp. 41-55. [See p. 53]. Gorée : Imprimerie du Gouvernement général. [8vo.]

Rinderpest.—C. describes his formolized vaccine which has been widely used in French Sudan. It has been developed largely on account of the prohibitive costs involved in preparing a vaccine at a fixed laboratory, and is made very cheaply and simply in the field on the scene of actual outbreaks. The vaccine is a formolized filtrate of spleen, lymph nodes, tonsils, thymus and lungs of calves with acute rinderpest. Great care is taken to dilute the formalin to a standard strength, and it is added in 3 to 4 parts per 1,000 to the saline in which the tissue pulp is suspended. The vaccine is used after 48 hours' storage in the shade, the dose being from 10 to 60 c.c. (subcut.). Immunity is acquired in 10 to 12 days and lasts about six months. It is used in circumstances where a short immunity is enough or for lack of a better method which is sometimes not available when required.

Sero-vaccination [? with formolized vaccine] is used to a small extent only.

" Sero-infection " is used for choice in A. O. F. for controlling rinderpest in infected areas. It requires very careful supervision to get antiserum and virulent blood correctly proportioned and confers immunity of 3 or more years' duration.

" Vaccino-infection " is used in uninfected areas, virus being given 12 to 20 days after [? formolized] vaccine : it confers long and powerful immunity.

Saponin vaccine has been tested. A 2% saponin solution is mixed in equal parts with a suspension of virulent organ pulp : it causes a general reaction and an immunity of a duration yet unknown. It is even easier to prepare than formolized vaccine.

Contagious Bovine Pleuro-Pneumonia.—Formolized vaccine has been used to some extent in A. O. F. but is not reliable as the virus tends either to be killed or to resist the action of formalin. Tests have been started with a saponin vaccine but no results of importance are yet available. C. has made a request for funds to undertake extensive research at various laboratories.—J. E.

I. Gambarov, G. S., Gubin, A. P., & Kulakov, G. E. (1936). Kartina krovi pri infekcionnoj anemii lošadej. [**Blood Picture in Equine Infectious Anaemia**].—*Trud. vsesojuz. Inst. eksp. Vet.* **12.** 5-12. 2 tables. [Numerous refs.] [French summary].

II. Kozlova, E. S., & Semenov, M. A. (1936). Fiziko-chimičeskoe sostojanie krovi bolnych infekcionnoj anemiej lošadej. [**Blood Composition in E.I.A.**]—*Ibid.* 13-21. 7 tables. [2 refs.]

III. Gambarov, G. S. (1936). Diferencialnaja diagnostika infekcionnoj anemii lošadej ot kroveparasitarnych zabolevanij (piroplazmoza i nuttalioza). [**Differential Diagnosis of E.I.A. and Piroplasmosis**].—*Ibid.* 22-29. [14 refs.] [French summary].

IV. Gubin, A. P. (1936). Virusonositelstvo i virusovydelenie pri infekcionnoj anemii lošadej. [**Virus Carriers in E.I.A.**]—*Ibid.* 30-34. 1 table. [8 refs.] [French summary].

V. Kulakov, G. E. (1936). Rol kontakta v epizootlogii infekcionnoj anemii lošadej. [**Transmission of E.I.A. by Contact**].—*Ibid.* 35-37. [French summary].

VI. Semenov, M. A., & Kozlova, E. S. (1936). Rol vlasoedov kak perenosčikov infekcionnoj anemi lošadej. [**Lice as Vectors of E.I.A.**]—*Ibid.* 38-45. 1 fig. [5 refs.] [French summary].

VII. Gambarov, G. S., Gubin, A. P., & Kulakov, G. E. (1936). Ispytanie terapertičeskogo dejstvija rtutnogo reagenta Mejera i biochinolja pri infekcionnoj anemii lošadej. [**Chemotherapy of E.I.A.**]—*Ibid.* 46-49. [French summary].

VIII. Semenov, M. A., & Oldenborger, N. A. (1936). Obezzaraživajuśćie svojstva 0·5% fenola pri konservirovanii syvarotki lošadej, soderžaśćej virus infekcionnoj anemii. [**Action of Phenol on Virus of E.I.A.**]—*Ibid.* 50-54. [3 refs.] [French summary].

IX. Semenov, M. A., & Oldenborger, N. A. (1936). Vozmožnost spontannogo zabolevanija svinej infekćionnoj anemiej lošadej. [**Possible Infection of Pigs by E.I.A.**]—*Ibid.* 60-66. [French summary].

X. Gindin, A. P. (1936). O diagnostičeskoj cennosti patologo-histologičeskoj kartinij pečeni u ptic (golubi i kury) zaražennych virusom infekcionnoj anemii lošadej. [**Biological Diagnosis of E.I.A. from Fowls and Pigeons**].—*Ibid.* 67-77. 2 tables. [Numerous refs.] [French summary].

XI. Akulov, A. V. (1936). Patologo-anatomičeskie izmenenija pri infekcionnoj anemii lošadej. [**The Lesions in E.I.A.**]—*Ibid.* 78-87. 6 figs. [14 refs.] [French summary].

I. The authors examined the blood of 60 horses naturally infected with E.I.A. They observed reduction in the R.B.C., and haemoglobin and lymphocytosis.

II. Case records are given to show the reserve alkalinity, albumin content, surface tension and viscosity, bilirubin content and retractability of the blood in horses infected with E.I.A. K. and S. found the reserve alkalinity increased the albumin content between 6% and 8%, and the blood viscosity diminished during the disease. The retraction of blood clots was retarded and bilirubin content increased two-fold.

III. The differentiation of E.I.A. and piroplasmosis is described. It depends on the absence of piroplasms during febrile attacks.

IV. G. describes successful attempts to infect three colts with serum filtrates from horses chronically infected with E.I.A. The urine filtrates failed to infect two colts by subcut. inoc. as also did filtrate of saliva.

V. A few experiments are described [results are of doubtful significance owing to questionable technique].

VI. 300 specimens of *Trichodectes equi* were transferred from a colt infected with E.I.A. to a healthy one which developed the disease after 32 days. The disease was further transferred to two other colts from the latter. Attempts to transmit the disease by a suspension of eggs from lice present in affected horses succeeded at the second attempt.

VII. " Mayer's mercurial reagent " and " trochinol " were found to be ineffective for the cure of E.I.A.

VIII. The virus of E.I.A. remained virulent for five months at room temperature but had become attenuated at seven and a half months. Virulent serum preserved in 0·5% phenol was infective but, attenuated after six months.

IX. Samples of sera were obtained from pigs showing recurrent fever which were kept on a farm where E.I.A. existed and were filtered and injected into two young pigs and into guinea pigs which the authors state developed a disease which is typical of E.I.A. in these animals. No tests on horses are reported.

X. G. describes experiments on pigeons made with the object of using them as diagnostic animals for E.I.A. The liver was examined for histological changes. No significant results were, however, obtained.

XI. Details of changes in the liver, spleen, kidneys and heart of spontaneous and experimental cases of E.I.A. are given.

I. Jauffret, R. (1936). Une campagne de vaccination contre la rage du chien au Cambodge. [**Vaccination of Dogs against Rabies in Cambodia**]. —*Arch. Inst. Pasteur Indo-Chine.* **6.** 393-401.

II. Remlinger, P. (1937). Ce que l'étude de la rage doit à l'U.R.S.S. [**Russia's Part in Rabies Research**].—*Maroc méd.* **17.** 168-175.

III. Remlinger, P., & Bailly, J. (1937). L'urée sanguine dans la rage expérimentale du chien et du lapin. [**Blood Urea in Rabies in the Dog and Rabbit**].—*C. R. Soc. Biol. Paris.* **125.** 220-222. 3 tables.

I. In two provinces 385 dogs were vaccinated. The advantages and disadvantages of the method are discussed. Generally speaking, the campaign was welcomed by the native owners. The vaccine supplied by the Institut Pasteur de Nhatrang was injected behind the shoulder. The local reaction was negligible. When the dose exceeded 20 c.c. one injection was made behind each shoulder. The necessity of a second dose after an interval of three weeks is a drawback to the practical application of the vaccine. A few accidents after vaccination were observed. These are discussed and it is considered that only one of them could be attributed directly to the vaccine. Vaccination of domestic dogs and the destruction of stray dogs are recommended.

II. A review of rabies research carried out in Russia since 1914. Phenolized and glycerolized vaccines are compared.

Numerous small inoculation centres have been established where people can be vaccinated without the necessity of making a long journey to a central laboratory. The results of this decentralization have been excellent. There has been less desiccated vaccine used, phenolized vaccine apparently being the best for transport to the out-stations.

The filtrability and cultural properties of the virus are discussed. The weight of evidence indicates that the blood of immunized animals contains rabicidal bodies.

An emulsion of the virus treated with glycerol appears to give a more solid immunity in animals than virus treated with phenol. Unfortunately two or three doses are necessary to produce complete immunity.

III. The variation of blood urea in rabies has apparently not previously been noted. In 25 artificially infected dogs there was a considerable increase in blood urea during the course of the disease. Similar results were obtained in rabbits. When three healthy dogs were starved for three days there was little change in the amount of blood urea.—F. H. Manley.

Remlinger, P., & Bailly, J. (1936). Transmission de l'encéphalomyélite des equidés (virus californien) au vautour fauve (*Vultur fulvus* Briss). [**Transmission of Californian Equine Encephalomyelitis Virus to the Vulture**]. —*C. R. Soc. Biol. Paris.* **123.** 562-563. [Also appeared in *Maroc méd.* **17.** 20-21].

R. and B. describe transmission of eq. enceph. to a vulture by inoculation under the dura mater of 1 c.c. of a 1 : 40 emulsion of brain material, taken from a g. pig dying of the disease. A control g. pig received 0·3 c.c. of the same emulsion. The vulture began to show symptoms two days after inoculation, muscular contractions and partial paralysis being followed by complete paralysis and death on the fourth day. The g. pig also died on this date after showing similar symptoms.—S. J. Gilbert.

Martins, O. C. (1936). A raiva em Santa Catharina. [**Rabies in Santa Catharina, Brazil**].—*Folha vet., Brazil.* **1.** 52-58.

A brief history of the spread of the disease and prophylaxis (vaccination of cattle by single-dose vaccine and destruction of vampire bats).—S. Torres.

Proença, M. C., & de Menezes Gil, A. (1936). Sobre a prophylaxia de raiva no Rio de Janeiro. [**Prevention of Rabies in Rio de Janeiro**].—*Bol. vet. Exer. Brazil.* **3.** 322-329. 5 graphs. [4 refs.]

The authors discuss the spread of rabies in dogs [unrelated to infection from bats], from 1930 to 1936, with an epidemic in 1935, when there were some human cases. The deficiencies of the present sanitary measures and the need for a more rigorous control are discussed.—S. Torres.

Savickis, J. (1937). Pasiutimo liga Lietovoje ir kaimyniniuose kraštuose. [**Rabies in Lithuania and Neighbouring Countries**].—*Vet. ir Zootech., Kovno.* **14.** 105-117. 5 tables. [5 refs.] [German summary].

There are no statistics for rabies in Lithuania up to 1924 and it was the custom for owners to kill their rabid animals themselves. Between 1924 and 1936, 589 cases of rabies were observed and there was a bad outbreak in 1928, since when the annual incidence has fallen considerably. In 1936 only 3 cases were diagnosed. Rabies is less wide-spread in Lithuania than in the neighbouring states.

—A. Pabijanskas.

Sokola, D., & Zeliko, M. (1936). Pojava Aujeszky-eve bolesti kod svinja. [**Aujeszky's Disease in Pigs**].—*Jugoslov. vet. Glasn.* **16.** 612-616. 1 fig. [12 refs.] [German summary].

An account of an outbreak which was diagnosed both clinically and from observations on rabbits, mice, a dog, a cat and a calf experimentally inoculated with material from the pigs.

I. Donatien, A., & Lestoquard, F. (1937). Recherches sur le virus claveleux. [**Research on Sheep Pox Virus**].—*Rev. Méd. vét., Toulouse.* **89.** 262-271.

II. Stamatin, N. (1937). Essais d'adsorption du virus de la clavelée au moyen du kaolin et du charbon animal. [**Adsorption of Sheep Pox Virus by Means of Kaolin and Animal Charcoal**].—*C. R. Soc. Biol. Paris.* **124.** 984-986. [7 refs.]

I. Caution should be exercized in drawing conclusions from experiments with this virus in view of the great variation in resistance offered by sheep in different areas, and also because of the possibility of a change in virulence of the virus under examination.

It was noted that several strains rapidly lost virulence for no apparent reason, and became useless for purposes of vaccine preparation. [This was also observed when working with Cyprus and Turkish strains].

11 strains from various countries were studied. The virulence was measured against the immunizing value of a known serum by simultaneous inoculation.

It was shown that on repeated passage through sheep each virus had a primary period of exalted virulence, a period of modified virulence and a period of further attenuation. Excepting the Pendik virus, which was variable, no strain at any time became exalted on passage.

II. A highly virulent centrifuged virus was used. Throughout the experiments variations were made in the dilution of the virus, the quantity of adsorbant, the duration of contact, the temperature and the pH.

The results indicated that animal charcoal has considerable powers of adsorption of the virus, particularly in an acid medium. The adsorption by kaolin was negligible.—F. H. Manley.

Ješić, J. (1937). Pet godina primjene naše limfe protiv ovčjih boginja. [**Five Years' Use of Sensitized Sheep Pox Vaccine**].—*Vet. Arhiv.* **7.** 298-311. 2 tables. [20 refs.] [French summary].

Over half a million sheep have been immunized against sheep pox in Central Yugoslavia since 1931. The number of " takes " was satisfactory and the vaccine proved harmless to the animals inoculated. Immunity of three years' duration is said to result.

Kaalund-Jørgensen, O., & Thomsen, A. S. (1937). Det overførbare veneriske Sarkom hos Hunde. [**Transmissible Venereal Sarcoma of the Dog**].—*Maanedsskr. Dyrlaeg.* **48.** 561-578. 14 figs. on 2 plates. [4 refs.]

The authors describe eight spontaneous cases of canine contagious venereal sarcoma, two in males and six in females. The histological picture of four cases examined was identical, resembling a reticulo-sarcoma. In one male the tumour grew on the penis and in the other in the rectum. In females the tumours grew in the vagina. Metastases sometimes appeared. The authors have transferred the tumour to four other dogs, by injection (subcut.) of tumour cells and by rubbing of tumour material on the scarified mucous membrane of the penis. They have not succeeded in transferring the tumour to mice.—H. Berthelsen (Stockholm).

PARASITES IN RELATION TO DISEASE (GENERAL).

Ridala, V. (1936). Hoberebaste koktsidioosist ja teistest tähtsamatest hõberebaste parasitaarhaigustest. [**Coccidiosis and Other Parasitic Diseases of Silver Foxes**].—*Eesti loomaarstl. Ring.* **12.** 241-258. 12 figs. on 1 plate. [Numerous refs.] [English summary].

The most important parasites of silver foxes, *Ascaridia*, Ancylostomidae, lung worms and coccidia are described. Then follows a detailed description of coccidiosis in two dead fox cubs. Besides the ordinary outward symptoms of parasitic disease the two cubs had a slight catarrhal gastritis and a severe catarrhal enteritis, which here and there had developed into a haemorrhagic inflammation ; both cubs had a slight colitis, fatty degeneration and a passive hyperaemia of the liver, fatty degeneration of the kidneys and heart muscle, and oedema and passive hyperaemia of the lungs. The measurements of 150 oocysts which resembled *Lucetina canivelocis* in smears from the contents of the intestines showed them to be 21·32 to 37·21 by 18·66 to 30·99 microns large. Besides other changes the histological study showed developmental forms of *L.c.* in the mucous membrane of the small intestine, especially in the end part of the jejunum and in the ileum. —Elfriide Ridala (Tartu).

PARASITES IN RELATION TO DISEASE (ARTHROPODS).

Stenius, R. (1936). Nautapaarma ja sen vastustaminen. Nautapaarma eli naudan ihosaivartaja ja sen hehitys. [**Ox Warble Flies and their Control**]. —*Suom. Eläinlääkäril.* **42.** 121-137 and 151-163. 1 map.

Ox warble flies are very prevalent in South-East Finland and also occur in the South and South-West. S. believes that 27% of herds of cattle are affected ; the damage to hides causes an annual loss of 3,132,000 Finnish marks, a loss to the meat trade of 3,915,000 marks and to the milk trade of 25,116,480 marks, or of 33,000,000 marks in all. A state control scheme is being organized.

Baranov, N. (1936). K poznavanju golubačke mušice. III. [**The Golubatz Midge. III**].—*Vet. Arhiv.* **6.** 137-220. 3 figs., 8 tables, 1 map. [2 refs.] [Russian summary]. [See also *V. B.* **5.** 429].

During the spring of 1935 larvae and pupae of the Golubatz midge were found in the rivers Danube, Nishava and Morava [Yugoslavia]. Larvae were also detected in the stomachs of fish caught in those rivers. The rearing of larvae under laboratory conditions in an aquarium was not successful. [Puri. (1925). *Parasitology*. **17.** 295. succeeded in rearing the immature stages in the laboratory]. B. came to the following conclusions:– (1) the main breeding place is the river Danube in the region of the Iron Gate, (2) larvae and pupae of *S. reptans* differ from those of *S. columbaczense* (the Golubatz midge), so that the latter must be considered a species in itself, and not a sub-species of the former, and (3) a new sub-genus, *Danubiosimulium*, is suggested for *S. columbaczense*, on account of its special biological (highly irritating) habits.

There is a striking difference between the degrees of invasion in the years 1934 and 1935. While in 1934 there was a real invasion of the flies, it is estimated that in 1935 the numbers were 7,000-8,000 times smaller than in the previous year.

For a strong invasion the following factors are required :– (1) in the year prior to the occurrence of the infestation, in the spring high level in the Danube and no extreme alterations in climatic conditions, thus facilitating oviposition, and (2) in the spring of the year of the invasion, fall of the water level, high temperature, and absence of heavy rainfall and strong wind, so as to allow hatching. Finally the spreading of the adults is governed by the direction of the wind.

Nineteen preparations were tested regarding their action upon simulium larvae. Lysol was the best of all ; it killed immediately in a 0·5 % solution. Keys are given for the determination of kindred genera.—B. Oswald (Split).

PARASITES IN RELATION TO DISEASE (HELMINTHS).

Mikačić, D. (1936). Entoparazitička fauna konja savske banovine. [**Internal Parasites of Horses in Yugoslavia**].—*Vet. Arhiv.* **6.** 529-546. 1 table. [16 refs.] [German summary].

One hundred horses from the vicinity of Zagreb, Yugoslavia, were examined for internal parasites other than those living in the large intestines [which had been already studied in an earlier work – see *V. B.* **6.** 814]. The following parasites have been found : *Fasciola hepatica* in the bile ducts ; *Anoplocephala magna* in the stomach and small intestine – *A. perfoliata* is very rare ; *Paranoplocephala mamillana* in the small intestine ; *Parascaris equorum* in the stomach (P.M. invasion ?) and in the small intestine ; *Onchocerca cervicalis* in the ligamentum nuchae and surrounding tissues (in 62 % of the horses) ; *Setaria equina* in the peritoneal cavity, stomach and small intestine ; *Habronema muscae* on the gastric mucous membrane ; *H. megastoma* in nodules of the gastric submucosa ; larvae of *Strongylus equinus* in the peritoneal cavity, under the peritoneum, and in the mesentery ; larvae of *S. edentatus* in the peritoneal cavity and under the peritoneum ; larvae of *S. vulgaris* in aneurysms of the mesenteric artery (in 86 % of the horses examined) ; *Trichostrongylus axei* on the gastric mucous membrane ; *Dictyocaulus arnfieldi* within the bronchi; and larvae of *Gastrophilus* species in 50 % of the horses examined. Larvae of *Rhinoestrus purpureus* were found in the maxillary and frontal cavity in one instance.—B. Oswald (Split).

Cameron, T. W. M. (1937). **Concepts and Mechanisms of Resistance in Helminthic Infections.**—*Canad. J. Res.* Sect. D. **15.** 77-90. [16 refs.]

In this theoretical survey of the immunological relations between host and helminth, C. suggests a tentative classification of those relations which could form the basis for a discussion leading to a permanent classification which would fit into the *general* terminology. He proposes three concepts :– compatibility and incompatibility – either being complete or incomplete – which refer to the host environment as it exists before invasion by the helminth ; resistance (virtual, absolute or partial, natural or acquired) and premunition, which refer to the reaction of the host to the presence of the parasite ; and tolerance and intolerance, which refer to the reaction of the host to the effects of the parasite. In addition the differences between the biology of helminth and protozoan or bacterial parasites are discussed from the point of view of resistance, and also the factors necessary for their successful parasitic existence.

I. Miller, M. J. (1937). **The Parasites of Pigeons in Canada.**—*Canad. J. Res.* Sect. D. **15.** 91-103. 17 figs., 1 table. [Numerous refs.]

II. —. (1937). **The Experimental Infection of Pigeons and Poultry with Ascaridia and Heterakis.**—*Ibid.* 105-110. 2 figs. [2 refs.]

I. M. records and describes *Ascaridia colombae, Capillaria colombae* and *Echinostoma paraulum* from pigeons in Canada ; the last mentioned is recorded for the first time from North America. A check-list of all helminths from this host is included.

II. M. finds that, while *A. gallinae* and the caecal worms of chickens are not transmitted to chickens, *A. colombae* of pigeons may live in young chickens for 96 hours but not for 120 hours.—T. W. M. Cameron.

Ots, H. (1936). Maksakaantobi lammastel ja veistel Eestis. [**Liver Flukes in Sheep and Cattle in Estonia**].—*Eesti loomaarstl. Ring.* **12.** 40-56. 6 tables. [2 refs.]

According to the data of abattoirs, liver flukes were observed in 57·3% of sheep and 71·7% of cattle slaughtered. Distomatosis in Estonia is chiefly caused by *Fasciola hepatica* ; *Dicrocoelium lanceatum* occurs rarely. Eosinophile leucocytes were to be found in great numbers in the livers of affected sheep, as well as in those of cows, especially in bile-duct lesions.—Elfriide Ridala (Tartu).

Turner, E. L., Dennis, E. W., & Berberian, D. A. (1935). **Studies on the Production of Artifical Immunity against *Echinococcus granulosus* in the Definitive Host. [The Results of Four Years Investigation of this Problem].** —*J. Egypt. med. Ass.* **18.** 536-546. [In English]. [Copied *verbatim* from *Trop. Dis. Bull.* **33.** 101-102. Signed C. L.]

The authors report that some immunity has been obtained in the dog to infection with *Echinococcus granulosus* by injection of an antigen obtained from hydatid cysts.

The work comes from the American University of Beirut, Syria. About a quarter of the street dogs have the strobile. Those used for testing were believed to be clean. From 3,000 to 50,000 scolices were given in food to 19 controls, 18 became infected, 13 heavily so. Six dogs had 5 injections of 1 per cent. phenolized antigen made from the cuticular and germinating membrane of sterile cysts ; when fed, 21 to 27 days later, with 1,000 to 10,000 scolices, 3 were negative, 2 were heavily infected and the sixth was judged to have been infected before. Thirty-two dogs were given 2 to 5 injections of a 1 per cent. suspension of scolices

and membrane from fertile cysts, 17 became infected, 15 free from infection after being fed with " infected material " at an interval of 6 to 122 days after the last injection. Twenty-three dogs were given 1 to 5 doses of antigen, being a suspension of 1,000 to 20,000 scolices from fertile cysts, and fed with infective material 4 to 238 days after the last injection, and autopsy was made 24 to 131 days later ; 10 had no infection and 5 had heavy infections. The Casoni reaction was useless in determining whether a dog had the tapeworm.

LEROUX, P. L. (1936). **On *Schwartziella*, a New Nematode Genus for *Cooperia nodulosa* Schwartz, 1928.**—*J. Helminth.* **14.** 113-118. 3 figs., 1 table. [3 refs.]

L. has observed that the telamon is absent from two species belonging to the genus *Cooperia*, and as this difference coincides with certain small dissimilarities of the specules and arrangement of the bursal rays, he considers that a new genus should be made for their reception. The name proposed is *Schwartziella*, and the two species are *S. nodulosa* from the carabao and *S. serrata* which occurs in sheep in Kenya Colony.—E. L. TAYLOR.

I. TEIXEIRA DE FREITAS, J. F., & LINS DE ALMEIDA, J. (1935). Sobre um novo nematodeo parasito de ave domestica. Capillaria cairinae n. sp. [**A New Nematode Parasite of Ducks,** *Capillaria cairinae n.sp.*]—*Rev. Dep. nac. Prod. anim., Rio de J.* **2.** 139-141. 1 fig. [8 refs.] [English and French summaries].

II. —., & LENT, H. (1936). Estudo sobre os capillariinae parasitas de mammiferos. [**Parasitic Capillariinae of Mammals**].—*Mem. Inst. Osw. Cruz.* **31.** 85-160. 130 figs. on 16 plates. [Numerous refs.]

I. A detailed description of a new species (male and female) of *Capillaria* parasitic in the oesophagus of a drake (*Cairina moschata dom.* L.).

II. This paper deals with the species of *Capillaria* Zeder, 1800, known as parasites of mammals ; the authors give a complete list of synonyms, a morphological description of each species (130 figs.) and a systematic classification of the hosts. Of the 57 species reviewed, 33 were considered well known, and 24 insufficiently described or known. The authors refer to the 13 species known in Brazil, especially *C. felis-cati*, *C. gastrica* and *C. hepatica*.—S. TORRES.

MEYER, W. C. P. (1936). Trichinenkeuring bij varken en hond volgens de methode Reiszmann. [**Reiszmann's Technique for Examining Pigs and Dogs for Trichinosis**].—*Ned.-ind. Bl. Diergeneesk.* **48.** 41-47. 2 tables. [3 refs.] [German summary].

As there was still some doubt in the Bataklands Residency, Tapanoeli, M. examined 24 slaughtered trichinous pigs. In 15 pigs the pillars of the diaphragm seemed to be infected more heavily than the costal parts. In 14 trichinous dogs and 1 trichinous cat Reiszmann's technique [(1911). *Z. Fleisch- u. Milchhyg.* **19.** 1.] for examining for trichinosis was compared with the method by which 6 pieces were taken from the tongue, larynx, and from the pillars and costal part of the diaphragm (24 pieces altogether). Reiszmann's technique for examining proved more effective.—M. J. J. HOUTHUIS (ROTTERDAM).

FOGGIE, A. (1937). **An Outbreak of Parasitic Necrosis in Turkeys Caused by *Plagiorchis laricola* (Skrjabin).**—*J. Helminth.* **15.** 35-36. 1 fig. [1 ref.]

This outbreak occurred in a flock of 23 turkey poults, of which 22 died. All showed similar symptoms – drooping and failure to put on weight. On P.M.

examination a necrotic enteritis was found affecting the whole of the small intestine and duodenum, and examination of the faeces showed large numbers of fluke eggs. Treatment with kamala, 10 grains per bird, was unsuccessful.

The fluke has been provisionally identified as *P.l.* A complete description of the parasite is given, illustrated by a drawing.

This is believed to be the first record of *Plagiorchis* in Northern Ireland.

—S. J. Gilbert.

Sánchez Botija, C. (1936). Contribución al conocimiento de la spirocercosis canina en España. (Estadistica, patogénesis, anatomia patológica). [**Canine Spirocercosis in Spain**].—*Trab. Inst. Biol. anim. Madr.* **4.** 88-109. 8 figs., 1 table.

This parasite is found mainly in the encysted wall of the oesophagus, aorta and stomach of affected dogs, and is seldom found elsewhere in the body.

The life-history is not well known, but it is believed that the embryo passes through certain beetles which act as intermediate hosts and that these are eaten, particularly by birds and fowls, the parasite being transmitted to dogs, when they ingest infected viscera. Other authorities state that the embryo infects the dogs through the agency of the dog louse.

The lesions consist of fibrous enlargements in the muscular wall of the thoracic portion of the oesophagus, the aorta and stomach, and many of them contain adult parasites. Aneurisms develop in the aorta. In one year in Madrid there were 180 cases in 2,000 dogs treated.

The lesions in the oesophagus are always much more pronounced than those in the aorta, and it is in the oesophagus that the adult parasites are found.

—W. L. Marshall.

Hu, C. H., & Hoeppli, R. J. C. (1936). **The Migration Route of *Spirocerca sanguinolenta* in Experimentally Infected Dogs.**—*Chin. med. J.* Suppl. I. pp. 293-311. 1 text fig., 23 figs. on 7 plates, 1 table. [2 refs.] [In English].

As a result of observations on the migrations of the larvae of *S.s.* in 13 young dogs, H. and H. realized that the conclusions arrived at by Faust were not altogether correct. They agree that the larvae migrate to the oesophagus from the wall of the stomach but not that they pass through the capillaries of the liver and the lungs. Measurements of the larvae show them to be too large to do this. The authors' observations show the route of migration in the walls of the arteries.

—E. L. Taylor.

Ivanov, K., & Emanuelov, I. (1936). Izsledvanija v'rhu lingvatnlozata na mezenterialnitĕ limfni vŭzli na ovcata u nas'. [**Linguatulosis of Mesenteric Lymph Nodes of Sheep in Bulgaria**].—*Annu. Univ. Sofia.* **9.** 119-134. 2 figs.; 1 table. [8 refs.] [In Bulgarian : German summary].

I. and E. examined lymph nodes from 400 sheep killed in the town abattoir, Sofia. They found that 98% of these were infested with larvae of *Linguatula serrata*. They consider that this very high percentage was due to the fact that there is a high percentage of infestation in dogs in Bulgaria (21·35%). They also consider that sheep have absolutely no resistance to the parasite. The percentage of infestation in sheep 8-12 months old is slightly lower (95%) than that in adult animals. Infestation is less intensive in cattle than in sheep.

IMMUNITY.

Viaut. (1937). De la conduite à tenir pour un expert en face d'un bovin réagissant à la tuberculine, et ayant été prémuni contre l'entérite paratuberculeuse ou vacciné par le B.C.G. [**The Problem of a Bovine Reactor to Tuberculosis which has been Premunized against Johne's Disease or Vaccinated with BCG**].—*Bull. Soc. vét. prat. Fr.* **21.** 122-127.

The chief points of discussion are the frequent co-existence of TB. and Johne's disease in an animal; the fact that BCG immunizes against TB. but not against Johne's disease; and the fact that animals inoculated with BCG or with Johne's disease vaccine react to tuberculin. It is definitely laid down in the French sale regulations that a reactor to the tuberculin test is to be considered to be affected with TB., whether the reaction is due to natural infection or a result of inoculation with BCG. Such vaccinated animals when offered for sale should be offered with a statement that they have been vaccinated and the purchaser should be induced to give the seller written evidence that he appreciates this; otherwise, if the animal reacts to tuberculin the sale becomes void according to the sale regulations. It is suggested that this difficulty might be overcome firstly by tuberculin-testing animals before vaccination against Johne's disease or with BCG and secondly, by effecting private sales rather than sales by auction.—H. B.

Anon. (1937). **Council of Agriculture for England.**—*J. Minist. Agric.* **43.** 958-970.

Anon. (1937). **Report from the Standing Committee on the Report Referred back from the Last Council Meeting on the Tuberculin Test for Imported Cattle.**—*Ibid.* 975-977.

At the 47th meeting held on Dec. 10th, 1936, the question of the tuberculin test of imported cattle arose. Whilst cattle imported from Canada must be negative reactors to the tuberculin test, Irish cattle are admitted entirely free and untested. It was decided that it is impracticable to subject the latter to the test, because it would serve no useful purpose, considering the incidence of tuberculosis on farms in Great Britain and because of the great expense and trouble that it would necessitate.—J. E.

Kvapil, V. (1937). O intradermalnej skúške tuberkulinovéj. [**The Intradermal Tuberculin Test**].—*Zvěrolék. Obz.* **30.** 121-124.

K. stated that, on the evidence of tests on 510 cattle, the intradermal test was as reliable as the subcutaneous test.—E. Přibyl (Brno).

Watson, E. A. (1937). **The Agglutination Test for *B. abortus* Infection As Applied at the Animal Diseases Research Institute, Hull, Que.**—*Rep. vet. Dir. Gen. Dep. Agric. Can., 1936.* pp. 45-46.

The technique in preparing antigen and serum dilutions is described. On completion of the set-up, the racks and tubes are incubated at 37-38°C. for 24 hours, then removed to room temperature overnight.

The reaction in the serum dilution of 1 : 100 is, as a rule, the deciding factor in the diagnostic test. There is no inflexible rule for the interpretation of the reactions, especially questionable or suspicious agglutination reactions. The animal and herd history, the extent of herd infection as indicated by the number of reacting animals, the period of gestation, age of the animal, etc., have to be considered; also, the condition of the blood sample itself and the serum taken from it.

In routine diagnostic procedure every sample is given the slow, tube aggl. test followed, in the case of any questionable or positive reaction, by the rapid, plate test. The use of the two separate tests guards against errors in technique and, in difficult readings, facilitates interpretation.

Fano, A., & Previtera, A. (1936). Sur l'agglutination aspécifique par alcali des suspensions bactériennes dans des solutions de sel ordinaire. [**Non-Specific Agglutination of Bacteria by Common Salt Solution**].—*Boll. Sez. ital. Soc. int. Microbiol.* **8.** 272-275. [9 refs.] [In French].

The authors observed that, when a suspension of *Bact. coli* in a physiological solution of common household salt was made slightly alkaline with KOH, flocculation occurred whereas this did not occur with suspension made in pure NaCl solution. Flocculation occurred more readily with light than with heavy suspensions but different strains of *B.c.* varied in susceptibility. Also variant types of one strain of *B.c.* were found to differ in behaviour according to the amount of KOH added to the suspensions. The authors found that the addition of KOH to common salt solution caused precipitation of magnesium hydrate which can be redissolved by the addition of acetic acid. If acetic acid is added to a bacterial suspension which has flocculated, the floccules break up.—C. McGaughey.

Duncan, J. T. (1937). **The Salt Optimum in Antibody-Antigen Reactions.**—*Brit. J. exp. Path.* **18.** 108-119. 5 figs., 1 table. [8 refs.]

For any effective combination of two of the three reagents concerned in agglutination, the immune serum, the bacteria and the salt, an optimal quantity of the third reagent for the highest velocity of agglutination can be determined by titrating it in a series of varying concentrations against constant amounts of the other two. The optimal quantities determined in this way D. calls the antibody optimum, the antigen optimum and the salt optimum respectively.

The data recorded prove that the antibody-antigen combination reaches its maximum at the salt optimum and diminishes progressively as the salt concentration deviates in either direction. The optimal salt concentration for the H form of agglutination is relatively low, and at high concentration of the sera it tends to fall still lower as the suspension : serum ratio falls. The optimal salt concentration for the O form is high in the presence of high serum : suspension ratio and it falls progressively with the fall in this ratio. These observations have led D. to suggest a method of obtaining relatively pure H and O antibody by dissociation from sensitized bacteria.—James Stewart.

Chorine, V. (1937). Les réactions sérologiques dues aux euglobulines. [**Serological Reactions due to Euglobulins**].—*Ann. Inst. Pasteur.* **58.** 78-124. 2 figs. [Numerous refs.]

This is a lengthy article devoted to an examination of certain serological reactions, more particularly the role of euglobulins in such tests. The paper is in three parts. Part I, which is the longest, is a critical study of the melanin flocculation test of Henry as applied to the diagnosis of malaria in man. C. finds that the presence of melanin is not essential to the result, that it exerts no antigenic action and that its role is merely that of an indicator, for which purpose other agents such as carmine, may be substituted. The reagent essential to the test is distilled water. The chemical mechanism of the reaction is a complicated one and is intimately related to the presence of euglobulins in the serum. The test, which is of undoubted value, has nevertheless greatest significance when a negative reading is furnished.

Part II is devoted to an examination of the resorcinal test of Vernes. C. finds that the pseudoglobulins play only a small part in the reaction which increases in proportion to the euglobulins present. Part III deals with the various serological tests employed in connection with kala azar. In this condition euglobulins are known to be greatly augmented in the serum.—C. DAVENPORT.

SCOGNAMIGLIO, R. (1936). A propos des variations du pouvoir bactéricide et de la fixation de certains microbes pathogènes dans la tuberculose expérimentale. [**The Resistance of Tuberculous Animals to other Infections**].—*Boll. Sez. ital. Soc. int. Microbiol.* **8.** 221-225. [7 refs.] [In French].

Tuberculous g. pigs and healthy g. pigs were inoculated (subcut.) with small numbers of *Salmonella typhi*. The results of cultural examinations of the lymph nodes and organs at various intervals indicated that limitation of the bacteria to the local lymph nodes was more efficient in the case of tuberculous animals. There was also evidence of increased bactericidal power in these animals. Similar results were obtained when *Brucella melitensis* was used but the results with staphylococci were not so definite.—C. MCGAUGHEY.

TISELIUS, A. (1937). **Electrophoresis of Purified Antibody Preparations.**—*J. exp. Med.* **65.** 641-646. 2 figs., 1 table. [6 refs.]

Electrophoretic measurements are of value in the characterization of proteins and other high molecular substances, and also give information regarding the chemical homogeneity of the material. The data discussed were part of the results of a detailed experiment designed to elucidate the electrochemical properties of protein in normal and immune sera. Antibody preparations isolated from type-specific antipneumococcus horse and rabbit sera were used. It was found that the electrophoretic mobilities of such antibody preparations were distinctly different from those of normal serum protein.—JAMES STEWART.

DISEASES, GENERAL.

BORY, L. (1937). Les maladies professionelles des vétérinaires. [**Professional Diseases of Veterinarians**].—*Rec. Méd. vét.* **113.** 342-363. [10 refs.]

After mentioning traumatic injuries B. divides infective diseases into two groups. One group he terms " infections of the past " the other " infections of the future ". The former group consists of glanders, anthrax, tetanus, rabies, ringworm, variola, foot and mouth disease and swine erysipelas. The second group includes undulant fever, psittacosis and Weil's disease. The various forms and clinical symptoms in man of each of the important diseases are given in detail together with suggested lines of treatment.—P. S. WATTS.

PABIJANSKAS, A. (1937). Kova su tuberkuloze, bruceloze bei mastitais 1936. [**Control of Tuberculosis, Brucellosis and Mastitis in Lithuania during 1936**].—*Vet. ir Zootech., Kovno.* **14.** 135-141. 5 tables. [German summary].

Since 1930 a voluntary eradication scheme for TB. has been in operation and, by 1937, 4,391 herds containing 57,631 cattle had been enrolled. The intradermal and ophthalmic tuberculin tests are employed. In 1936, 43,806 cattle were tested (tuberculin and clinical) and 3,749 (8·5%) reacted and 255 were found to be affected with open pulmonary TB. All kinds of TB. are notifiable and affected cattle are slaughtered; reacting cattle may only be sold for slaughter. Owners of tuberculous cattle which are slaughtered obtain state compensation of

50% of the value. A voluntary eradication scheme has proved successful as in three years the percentage of positive reactors has fallen by 4·3%.

Bovine brucellosis is notifiable and is not wide-spread in Lithuania, being more common in large herds. The incidence is thought to be 0·9% in all cattle.

There is no systematic control scheme for mastitis.

RADTKE. (1937). Zur Diagnose der Ferkelgrippe und Paratyphus der Schweine. [**Diagnosis of Piglet Influenza and Pig Paratyphoid**].—*Berl. tierärztl. Wschr.* Feb. 19th. 113-116. 4 tables. [18 refs.]

At the *post-mortem* examination of piglets affected with piglet influenza, bacteria of the salmonella group were found several times in the lungs. In order to ascertain the effect of the presence of these bacteria, R. infected two pairs of piglets (intranas.) with *S. typhi-suis* var. *voldagsen* and with *S. enteritidis* var. *rostock* respectively. Both types had been isolated from piglet lungs. During the following 8 to 14 days the only symptom was a passing cough. No changes were found *post mortem* in the organs and no salmonella could be demonstrated in the lungs. At the serological examination two piglets were negative, and one piglet infected with the *voldagsen* type, and one with the *rostock* type showed titres of 1 : 100 and 1 : 150 respectively.

R. considers that paratyphoid bacteria are not a cause of epidemic disease in swine.—G. HARTMANN (VIENNA).

ELZÉN, S. (1936). Korsförlamningen och mjölksyreteorien. [**Myohaemoglobinuria and the Lactic Acid Theory**].—*Svensk VetTidskr.* **41.** 437-452. [1 ref.]

A second contribution by the author to a discussion that has been going on for some time between CARLSTRÖM and the author on the former's treatise [*V. B.* **7.** 82].—GUSTAV NAERLAND (OSLO).

KRÜGER, H. (1936). Ueber die sogenannte Schleimdegeneration der Nasenmuscheln beim Pferde. [**Mucoid Degeneration of the Turbinate Bones in the Horse**].—*Inaug. Diss., Berlin.* pp. 28. 2 figs. on 1 plate. [Num. refs.]

A disease of the turbinate bones and sinuses of the head has been observed in horses of heavy breeds from six months to two years of age. The symptoms are swelling of the one side of the head and a purulent discharge from the corresponding nostril. Operation, which consists of trephining the affected side reveals swelling and mucoid degeneration of the turbinate bones and irrigation with astringent lotions is successful in some cases. The aetiology is not known.—F. F. (BERLIN).

FOURNIER. (1937). L'entéro-hépatite infectieuse des porcelets : maladie d'élevage due à l'infection ombilicate. [**Infectious Enterohepatitis of Piglets**].—*Rec. Méd. vét.* **113.** 23-24.

F. has observed 3 infected centres of this disease during the last three years. Young pigs became dull and had a poor appetite at weaning age. The skin was slightly yellow, the ears and tail drooped and the coat became harsh and staring. The affected animals drank urine. A very liquid, yellow diarrhoea commenced, followed by tenesmus. Gait became unsteady before death. The sows were usually healthy, but F. records one severe outbreak which was considered to be introduced by ailing sows, the litter of one of which developed the disease. P.M. examinations revealed slight hypertrophy of the liver which was irregularly jaundiced, and an acute enteritis.

A large proportion of two litters of pigs showed at the eighth day, a cording

of the umbilical vessels, but without suppuration. This cleared up, but six weeks later enterohepatitis appeared in both litters and the majority died.

F. therefore suggests, as a control measure, the immediate isolation of newborn pigs, the dressing of the umbilicus and returning to the sow only for suckling. —C. V. Watkins.

Krage, P. (1937). Das Auftreten der Schnüffelkrankheit bei Schweinen in Ostpreussen und deren Bekämpfung. [**Rhinitis in Pigs in East Prussia**]. —*Dtsch. tierärztl. Wschr.* **45.** 129-130.

It is stated that rhinitis is neither an infectious disease nor an avitaminosis, but a disturbance of internal secretion, probably a dysfunction of the parathyroid glands. It was found that rhinitis often broke out in the piglets bred out of healthy boars or sows which had been bought previously from farms where rhinitis occurs. Breeding experiments were carried out ; three sows from unaffected farms were mated with three different healthy boars out of affected farms ; they brought forth six piglets which developed rhinitis, and 11 badly developed piglets. The same three sows were mated twice with two boars from unaffected farms and produced 50 perfectly healthy piglets. During three breeding periods seven healthy sows from affected farms were mated with four boars from unaffected farms and brought forth 116 piglets in 15 litters ; two of these litters were entirely healthy but about 50% of the other 13 litters contracted rhinitis.

K. considers that rhinitis could be controlled by preventing the mating of affected animals.—G. Hartmann (Vienna).

I. Olson, C., & Zeissig, A. (1936). **A Study of the Antigenic Properties of Certain Normal and Pathological Lymphoid Deposits in Tissues of Chickens.**—*J. Immunol.* **31.** 309-320. 2 tables. [9 refs.]

II. Beach, B. A. (1937). **Field Observations on the Incidence of Fowl Leukosis in Hatching Eggs and Chicks.**—*J. Amer. vet. med. Ass.* **90.** 194-198. [3 refs.]

III. Stubbs, E. L. (1937). **A Study of Leukemia and Allied Diseases with Particular Reference to Leukemia of Chickens and its Relation to Tumours.** —*Vet. Ext. Quart. Univ. Pa.* **37.** 3-7. 2 figs. [3 refs.]

I. With a view to studying the relationship of fowl paralysis to lymphocytoma of the fowl, various animals were immunized with dried tissues representative of the two conditions. Their sera were used for complement-fixation tests. It was found that the Forssman antigen was widely present in chicken tissues, both normal and pathological, and evoked the corresponding antibody. The sera of rabbits injected with normal and fowl paralysis peripheral nerves contained, however, two additional antibodies, whereas no antigenic difference was discernable with lymphoid tissues.

II. A number of outbreaks of fowl paralysis and fowl leucosis in the field, which arose on farms where these diseases had not previously occurred, were apparently due to the introduction of chicks from hatcheries.

III. In the course of serial experiments with a transmissible strain of fowl leucaemia, two birds developed tumours in addition to leucaemia. Both agents were then regularly transmitted to fowls by blood inoculation. Injections by the intravenous route usually favoured leucaemic manifestations while the intramuscular route more often resulted in tumour formation.

The tumour resembled a spindle-cell sarcoma which, it is suggested, arose as the result of the proliferation of endothelial cells. Attempts were made to free the leucosis-producing agent from the neoplasm and *vice versa*, but without success. The origin of the tumour and its relation to leucaemia are discussed. —R. E. Glover.

Keller, K. (1937). Erblich bedingte Gliedmassenverkrümmungen. [**Congenital Curvature of the Limbs**].—*Wien. tierärztl. Mschr.* **24.** 289-296. 3 figs. [3 refs.]

Occasionally new-born foals show retraction of the flexor tendons in the forelegs, and retraction of the extensor tendons in the hind legs. K. takes these anomalies to be inherited, as they often occur together with clear degenerative characteristics.

In one stud, K. found that all foals which showed congenital curvature of the limbs were inbred and they were all foals by the same stallion. K. supposes this abnormal development to have been caused by a lethal gene of a recessive character. Congenital crippling of the hind legs has been found in dogs, and K. noted such a case after inbreeding between brother and sister. Neither did this brother and sister nor their parents present any anomaly ; their hereditary taint only became obvious by this inbreeding.—G. Hartmann (Vienna).

Henry, A., & Bory, L. (1937). Dermatose estivale récidivante du cheval. [**Summer Sores in Horses**].—*Rec. Méd. vét.* **113.** 65-78. 5 figs. [6 refs.]

This disease occurs in certain parts of Normandy where it was described as long ago as 1840. It recurs every summer in the same affected animals of either sex, the symptoms disappearing at the end of the season.

An intense pruritus is first observed extending from the occipital region along the upper surface of the body to the base of the tail. This is usually followed by loss of hair and the appearance of skin lesions. A thick greyish exudate forms on the surface of the skin. The skin becomes thickened, accentuating the skin folds on the crest.

Histological examination of affected skin shows an increased activity of the sebaceous glands. A subacute inflammation is observed in various places involving the whole thickness of the skin. In these places the epidermis had disappeared and degenerated follicles and sebaceous glands were partly replaced by a granular substance. Bacteriological examinations were without result.

There is no evidence that the disease is contagious. No acari of any kind have ever been found. Examinations for habronema were negative and lesions indicative of these parasites were absent.

The role of insects, food and water supply, and the effects of light and heat have also been considered, but could not be found to be a likely cause of the disease. Heredity appears to be a predisposing cause, both in stallions and mares. In treatment 2% sulphur dioxide in oil has given good results and vapour baths are suggested.

H. and B. recommend in addition restrictions on the use of affected stallions and mares.—S. J. Gilbert.

Dünemann, H. (1937). Die Röntgenuntersuchung des Strahlbeins bei Podotrochlitis. [**X-Ray Diagnosis of Navicular Disease**].—*Tierärztl. Rdsch.* **43.** 177-182 and 195-197. [10 refs.]

D. investigated X-ray diagnosis of navicular disease by irradiation from one side (through the navicular bone from end to end), but concludes that the method is unsatisfactory. Oxspring's technique [*V. B.* **6.** 444.] is, however, commended, but D. doubts whether it secures an earlier diagnosis than other methods, notably that of local anaesthesia of the pedal joint capsule. Both methods should be used in conjunction.—J. E.

Bankier, J. C. (1937). **Progress Report on the Investigation of Bovine Haematuria (Redwater) in British Columbia.**—*Rep. vet. Dir. Gen. Dep. Agric. Can. 1936.* pp. 47-50. 1 table.

Field Observations.—The disease occurs only in certain areas some of which are widely separated. The incidence of the disease in different herds within those areas varies considerably. Poorly drained pastures and accumulations thereon of surface water appear to be the only feature common to farms where the disease occurs, forming the most striking difference between " redwater " and non-" redwater " districts. Natural recovery from the disease has not been observed, not even in cattle which in the early stages of the disease have been removed from " redwater " farms to districts where the disease is unknown, and have been kept there for as long as four years.

Experimental Work.—Since 1932, cattle brought in from unaffected land have been kept on the experimental " redwater " farm in separate groups according to different conditions of feeding and watering. Those of the cattle which have developed the disease have all had access to the pastures in which surface water has been available. The actual significance of pasture conditions and surface waters is the object of studies in progress.—E. A. Watson.

Menkin, V., & Warner, Charlotte R. (1937). **Studies on Inflammation. XIII. Carbohydrate Metabolism, Local Acidosis, and the Cytological Picture in Inflammation.**—*Amer. J. Path.* **13.** 23-43. 4 text figs., 2 figs. on 1 plate, 2 tables. [Numerous refs.] [See also *V.B.* **6.** 860].

Pleural exudation was induced in dogs by the injection of 1·5-2 c.c. of turpentine into the right chest. Subsequent examination of the exudate showed that the rate of glycolysis increased as the inflammatory reaction progressed in intensity, so that within several days the concentration of lactic acid was considerably increased and a localized lactic acidosis resulted. The inflammatory exudate showed greater glycolytic activity than the blood as indicated by the higher level of exudate lactic acid and a correspondingly lower concentration of exudate sugar.

The cytological picture in an area of acute inflammation appears to be conditioned by the local pH, which depends on the rate of glycolysis and the depletion of alkali reserve. When the pH falls below 7·0, polymorphonuclear leucocytes seem unable to survive and the predominating infiltrating cell is the mononuclear phagocyte ; below a pH of 6·7 or 6·5, most of the leucocytes appear to be injured and frank suppuration ensues. Maintenance of an alkaline pH resulting from relatively diminished glycolytic activity is accompanied by a preponderance of polymorphonuclear leucocytes with no subsequent shift in the cellular constituents of the exudate.—R. Allcroft.

Wernicke, O. (1935). Carcinoma ocular hereditario en bovinos. [**Hereditary Eye Carcinoma in Cattle**].—*Arch. Oftal. B. Aires.* **10.** 773-776.

W. calls attention to an article on panophthalmia bovina carcinomatosa by Voges [(1902). *Zlb. Bakt. I. (Orig.).* **31.** 142]. He thinks that this article has not been given due attention, owing to the fact that the title does not indicate that the disease is limited to a special breed. W. has himself studied the disease for 20 years.

Voges' article described the disease in a pure-bred Hereford bull where there was a hard growth, unattached to the bone near an eye. P.M. there was no metastasis, and microscopically the growth was composed of pavement epithelium. Voges stated that the disease is observed only in old cattle of the Hereford breed of both sexes. It only appears in animals which have wholly white heads and never in those with a circle of coloured hair round the eye.

W. agrees with VOGES except that he considers that the head need not be completely white. Most of the head may be coloured but, if the eye is not completely surrounded by one of these coloured spots, there is a predisposition to the disease. He holds that the disease begins on the limbus corneae and spreads into the interior of the eye and tissues of the orbit and eyelids. In one bull, W. found the tumour to be strongly attached to the limbus but easily separable from the cornea.

W. reports 12 cases. A bull developed the disease in both eyes at 12 years old, and died. His progeny (cases II to XII) were healthy when descended from a healthy cow, but diseased when descended from a diseased one. He infers that the disease is only transmissible by females.

W. asserts that it is only the fact that the disease is transmitted exclusively in the female line that has prevented the Hereford breed from disappearing. He states that diseased bulls may safely be used as sires, but that at the first sign of the disease in a cow she should be at once excluded from breeding, together with all her female descendants, but her male descendants may be safely used for breeding.

BOURNE, M. C. (1937). **Metabolic Factors in Cataract Production.**—*Physiol. Rev.* **17.** 1-27. 4 tables. [Numerous refs.]

This article outlines our rather fragmentary knowledge of the metabolism of the normal lens, and discusses the relationship of certain metabolic disturbances to cataract formation.—A. ROBERTSON.

KLEMOLA, V. M., & KALLIO, K. (1934). Luustosta eläinruumiin kivennäisvarastona ja siinä tapahtuvista muutoksista. [**Bones as Reservoirs of Minerals**].—*Acta agr. fenn.* No. 31. pp. 261-279. 9 figs., 4 tables. [Numerous refs.] [English summary].

In many cases the feeding of cattle confined in stalls is unsatisfactory with regard to the mineral content of the diet. In such cases the bones regulate the mineral metabolism and are able to give up large quantities of minerals to the body as a whole. Bone spongiosa can be regarded as the labile mineral store for the body. Osteomalacia and rickets occur after dry summers.

—R. STENIUS (HELSINGFORS).

PŘIBYL, E. (1937). K aetiologii a therapii puerperální eklampsie. [**Cause and Treatment of Milk Fever**].—*Zvěrolék. Obz.* **30.** 5-10. [11 refs.]

Puerperal eclampsia in bitches is caused by a deficiency in Ca and occurs when the diet during gestation and lactation contains an insufficient quantity of Ca. During the attack of eclampsia, hypocalcaemia may be found. The proper treatment is, therefore, the administration of Ca, together with symptomatic treatment with narcotics. Prevention consists in feeding foods rich in Ca during the periods of gestation and lactation.

PUBLIC HEALTH.

NARBUTAS, J. (1937). Pieno kontrolė Lietuvoje. [**Milk Control in Lithuania**]. —*Vet. ir Zootech., Kovno.* **14.** 18-24.

A discussion of the difficulties in the milk control scheme, which are due to the lack of a centralization system.—A. PABIJANSKAS (KAUNAS).

I. Anon. (1936). Helsingfors stads Mjölkkontrollstations och Helsingfors Mjölkkontrollförenings årsberättelse för år 1935. [**Report of Milk Control in Helsingfors in 1935**].—*Suom. Eläinlääkäril.* **42.** 97-100.

II. Ehrström, W. (1937). Den kommunala mjölkkontrollens utveckling i Finland. [**Milk Control in Finland**].—*Ibid.* **43.** 156-164, and 192-199.

I. Over 95,000,000 litres of milk were sent to Helsingfors in 1935. Samples of milk from each sender were examined twice a month and 115,447 microscopic and bacteriological tests were carried out. Veterinary inspection of byres is obligatory. Byres are grouped according to quality and good ones receive a certificate. In Helsingfors there were 634 dealers in milk and 15 dairies.

II. A history of the development of milk control in Finland since 1879. Milk control is obligatory in Helsingfors and all the larger towns, and extends not only to milk but to the premises used in milk trade.—R. S. (Helsingfors).

Veenbaas, A. H. (1936). Het vraagstuk der tuberkelbacillen-vrije melk in Nederland. [**Tuberculosis-Free Milk in Holland**].—*Tijdschr. Diergeneesk.* **63.** 1280-1289. [English, French and German summaries].

Tuberculosis in man of bovine origin is well known in Holland. V. considers that there should be legislative measures, permitting the distribution of fresh milk only from farms in which it is certified that the cattle and attendants are free from TB. There should be compulsory pasteurization [Stassano and Voltana systems] of the milk on other farms.—M. J. J. Houthuis (Rotterdam).

da Silva Brito, O. (1936). Contribuição ao estudo do controle sanitario das carnes em S. Paulo. [**Meat Inspection in Sao Paulo**].—*Rev. Industr. anim.* **3.** 127-133.

B. considers the advantage of unified meat inspection control in Sao Paulo State.—S. Torres.

Finland. (1937). Ny metod vid bakteriologiska köttundersökningar. [**Finland: New Official Methods for Bacteriological Meat Inspection**].—*Skand. VetTidskr.* **27.** 193-197.

From carcasses which are to be so examined the following samples must be taken :– (1) two meat samples, one from an anterior and one from a posterior limb, (2) from the superficial cervical lymph nodes or the axillary l. nodes and the popliteal l. nodes (in swine and sheep the deep inguinal l. nodes), (3) from the spleen, and (4) from one of the kidneys. The organs must not be cut open before the bacteriological examination. This is made on one agar plate, one Drigalski and one Gassner plate, and in one test tube containing dextrose-agar. The boiling and frying tests for objectionable odour must also be made. Detailed directions are to be found for the diagnosis and treatment of infected meat.

—H. Berthelsen (Stockholm).

Janssen, J. (1936). Eenige ziekten van vogels, van belang voor de keuring. [**Poultry Diseases of Importance in Food Inspection**].—*Tijdschr. Diergeneesk.* **63.** 1099-1102.

J. advocates state veterinary inspection of poultry slaughtering, as well as better control of poultry diseases. Tuberculosis and salmonella infections are the two principal poultry diseases in Holland, which are of importance with regard to human food hygiene. TB. is rather prevalent in fowls and ducks. Infected carcasses should be condemned in the public interest. Salmonella infection in ducks and pigeons in Holland is due either to *S. typhi-murium* or to *S. enteritidis* var. *Essen*, both of which are pathogenic to man.—M. J. J. H. (Rotterdam).

THERAPEUTICS.

Nüsser, A. (1936). Vergleichende Untersuchungen über die bakterizide Wirkung verschiedener Desinfektionsmittel gegenüber dem Bakterium pullorum. [**Disinfectant Trials on** *S. pullorum*].—*Inaug. Diss., Berlin.* pp. 32. 2 tables. [Numerous refs.]

Of the 13 disinfectants tested, N. recommends " caporit ".—M. Burke.

von Jancsó, N., & von Jancsó, H. (1936). Chemotherapie trypanosomeninfizierter Tiere durch Blockierung des Kohlenhydratstoffwechsels der Parasiten mit Halogenessigsäuren. [**Chemotherapy of Animal Trypanosomiasis by Blockade of the Carbohydrate Metabolism of the Parasites with Halogen Acetates**].—*Biochem. Z.* **286.** 392-395. 1 table. [7 refs.]

Monobrom and monoiodo acetic acid, which inhibit the lactic acid fermentation of animal cells, have a chemotherapeutic action in mice injected with pathogenic trypanosomes.—J. M. Robson.

von Jancsó, N., & Novák, E. (1935). Mikrobiologische Grundlagen der chemotherapeutischen Wirkung. III. Mitteilung: Die Bindung chemotherapeutische versbreichter Goldverbindung durch verschiedene Arten von Rekurrensspirochäten. [**Microbiological Foundation for Chemotherapeutic Action. III. The Binding of Chemotherapeutically Active Gold Compounds with Various Species of Spirochaetes**].—*Zlb. Bakt. I.* (*Orig.*). **134.** 159-169. [12 refs.] [See also *V. B.* **6.** 545].

In a previous investigation into the action of gold preparations on spirochaetes the authors found that they were unable to demonstrate gold absorption by *Sp. usbekistanica* in treated rats, although gold preparations were more efficient in treating this infection than they were in curing infections due to *Sp. obermeieri* into the bodies of which the gold penetrates. They also noted that gold could be washed out of impregnated *Sp. obermeieri* by washing in human serum and that the process must be considered as one of physical absorption rather than of chemical combination. The authors do not consider that failure to demonstrate gold absorption by *Sp. usbekistanica* is evidence that the drug acts by stimulating the defence mechanism, but suggest that the drug may have the effect of making the medium unsuitable for the organism. They consider that insufficient experimental evidence has been produced to allow the acceptance of the theory of defence stimulation.—U. F. Richardson.

I. Hawking, F. (1937). **Studies on Chemotherapeutic Action. I. The Absorption of Arsenical Compounds and Tartar Emetic by Normal and Resistant Trypanosomes and its Relation to Drug-Resistance.**—*J. Pharmacol.* **59.** 123-156. 10 tables. [Numerous refs.]

II. Hawking, F., Hennelly, T. J., & Quanstel, J. H. (1937). **Trypanocidal Activity and Arsenic Content of the Cerebrospinal Fluid after Administration of Arsenic Compounds.**—*Ibid.* 157-175. 2 figs., 4 tables. [17 refs.]

III. Tatum, A. L., Pfeiffer, C. C., Kuhs, M. L., Lorenz, W. F., & Green, J. T., Jr. (1937). **A Study of the Sodium Salt of 3-Amino-4-Betahydroxyethoxyphenylarsonic Acid in Experimental Trypanosomiasis and Syphilis and in Clinical Syphilis and Neurosyphilis.**—*Ibid.* 241-248. 3 tables. [6 refs.]

IV. Friede, K. A., & Galanowa, N. W. (1937). Ueber den Einfluss des Endokrinen Systems auf den Chemotherapeutischen Effekt Aetiotroper

Arzneistoffe. I. Der Einfluss von Gravidan auf den chemotherapeutischen Effekt von Neosalvarsan bei experimenteller Trypanosomiase. [**Influence of the Endocrine System on the Chemotherapeutic Effect of "Aetiotropic" Drugs. I. Influence of "Gravidan" on the Effect of "Neosalvarsan" on Trypanosomiasis**].—*G. Batt. Immun.* **18.** 33-47. 3 tables. [18 refs.] [In German: English, French and Italian summaries].

I. Atoxyl-resistant trypanosomes were exposed *in vitro* to suitable concentrations of certain arsenical compounds; they were then centrifuged and the arsenic content of the supernatant fluid and of the trypanosomes was determined. Normal trypanosomes absorb all the available drug from suitable concentrations of trivalent compounds (reduced "tryparsamide", "nalarsol", "novarsenobillon"); absorption occurs very rapidly. Living resistant trypanosomes absorb little or none of the drug from similar concentrations of the above compounds; a similar difference between normal and resistant trypanosomes is observed when the parasites are exposed to reduced "tryparsamide" *in vivo*. Compounds to which the atoxyl-fast trypanosomes show no resistance, *e.g.*, phenyl-arsenoxide, sodium arsenite, and tartar emetic are absorbed to the same extent by both types of parasite. A certain proportion of the trivalent arsenical compound enters into combination with some component of the serum so that it is no longer trypanocidal, although it is not distinguished by the chemical method from the part which remains active. It is considered that the comparative failure of atoxyl-fast trypanosomes to absorb typical arsenical compounds constitutes the explanation of the drug-resistance of these parasites.

II. A method is described of examining *in vitro* the trypanocidal activity of the cerebrospinal fluid after the injection (intraven.) of arsenic compounds. Intraven. injection in man of 3 g. of "tryparsamide" leads to the appearance of trypanocidal activity in the C.S.F. This is considerable at 14 hours, maximal at about 40 hours and becomes almost inappreciable after 80 hours. The total arsenic content of the C.S.F. (estimated chemically) does not run parallel to the trypanocidal activity; it is maximal at 14 hours and falls rapidly during the subsequent 24 hours; it is shown that only a portion (1-25%) of the arsenic is present in an active trivalent form. The other pentavalent compounds examined caused approximately the same amount of arsenic to appear in the C.S.F. as "tryparsamide", but "orsanine" was equal or superior to "tryparsamide" in producing trypanocidal activity, while "neocryl" etc., were practically ineffective in this respect. Injection (intraven.) of trivalent arsenic compounds (neoarsphenamine, sulpharsphenamine diglucoside, silver arsphenamine) led to the appearance of lower concentrations of arsenic in the C.S.F., and the trypanocidal activity was slight or absent.

III. The drug was found to be far superior to "tryparsamide" in the treatment of experimental trypanosomiasis. It is liable to be toxic to the optic nerve and when the dosage is reduced so that toxic ocular manifestations are completely avoided, the therapeutic efficiency is also lowered.

IV. The administration of "gravidan" to animals injected with *Tryp. brucei* exerts no influence on the development of the disease. The authors claim that the treatment increases the chemotherapeutic action of "neosalvarsan" in experimental trypanosomiasis by reducing the percentage of relapses and the mortality of the animals.—J. M. Robson.

I. Murgatroyd, F., Yorke, W., & Corson, J. F. (1937). **Studies in Chemotherapy. XIII. The Changes Observed in *T. brucei* during Five Years' Maintenance in the Laboratory.**—*Ann. trop. Med. Parasit.* **31.** 145-163. 9 tables. [5 refs.]

II. Murgatroyd, F., & Yorke, W. (1937). **Studies in Chemotherapy. XIV. The Stability of Drug-Resistance in Trypanosomes. XV. Observations on the Loss of Transmissibility by *Glossina morsitans* of *T. brucei* Maintained in a European Laboratory.**—*Ibid.* 165-172 and 173-194. 12 tables. [10 refs.] [See also *V.B.* **5.** 847].

I. The first paper records observations on a strain of *Tryp. brucei* maintained either by inoculation from mouse to mouse, or g. pig to g. pig, or in g. pigs by inoculation occasionally interrupted by fly passage. The mouse strain became monomorphic losing the stout forms and the posterior nuclear forms. The pathogenicity for g. pigs was decreased, and for mice increased, whilst it lost its resistance to arsenicals, becoming readily curable by halarsol in doses as small as 0·04 mg. per 20 g. mouse, although 0·32 mg. failed to cure an infection when recently isolated. The transmissibility by *G. morsitans* was also lost.

The strains maintained in g. pigs acquired an increased pathogenicity to g. pigs and mice; the other characters were gradually lost as in the mouse strains, but much more slowly, and transmissibility by tsetse was retained for four years. A strain rendered resistant to arsenicals also retained its transmissibility by tsetse.

II. Pt. XIV of these studies deals with the production of resistance to trypanocidal drugs and the length of time that resistance is retained. Resistance to aromatic compounds of arsenic and antimony and to acriflavin is rapidly acquired by a trypanosome strain and persists indefinitely, strains of *Tryp. rhodesiense* maintained in mice still retaining this resistance after seven and a half years. To produce resistance to " germanin " required a year, as against two months in the case of acriflavin, and in strains of *Tryp. rhodesiense* maintained in mice, at least 90% of the resistance had been lost within a year. Resistance to Bayer 205 survives at least one passage through *G. morsitans*.

Part XV. Observations were carried out on a strain of *Tryp. brucei* maintained in g. pigs partly by inoculation and partly by fly passage. The strain retained its transmissibility for four years and then lost it. In 90% of the flies in which the trypanosomes became established outside the peritrophic membrane infection spread forward to the proventriculus. In only about 20% of the flies in which the proventriculus was involved were the salivary glands also invaded. In all the instances in which the salivary glands became infected, the infection had occurred by the 26th day or earlier. Considerable numbers of flies were encountered in which the proventriculus infection persisted for long periods without spreading to the salivary glands. The stages in loss of transmissibility appear to be firstly failure to extend from the proventriculus to the salivary glands, then failure to extend to the extraperitrophic space, and finally failure to infect the gut.—U. F. R.

Wolf. (1937). Betrachtungen über den heutigen Stand der Drusebekämpfung mit Versuchen über die chemotherapie mit gallensauren Alkalien. [**Control of Strangles: Chemotherapy Trials**].—*Z. Veterinärk.* **49.** 232-236. [5 refs.]

W. treated ten cases of strangles with sodium taurocholate. He considers on the basis of this scanty material, that the result was satisfactory and that it justifies a more extended test. The dose, 10 c.c. of a solution [strength not stated], was given intramuscularly.—G. Williamson.

I. Steck, W. (1936). Radikale Tilgung des gelben Galtes mit Hilfe der Akridin-Behandlung während der Laktation. I. Erfahrungen bei der Durchführung in den Beständen. [**Control of Streptococcal Mastitis by Acridin Treatment during Lactation. I**].—*Schweiz. Arch. Tierheilk.* **78.** 555-576. [5 refs.]

II. Steck, W. (1937). Radikale Tilgung des gelben Galtes mit Hilfe der Akridin-Therapie während der Laktation. II. Die Infusions-Therapie, besonders die Methode der Zysternenbehandlung mit hochkonzentrierten Lösungen. [**Eradication of Mastitis by Acridin Treatment during Lactation. II. Infusion Therapy**].—*Ibid.* **79.** 1-20. 1 fig., 8 tables. [Num. refs.]

I. S. records the success obtained in the control of streptococcus mastitis in eight herds by infusion of infected udders with acridin compounds and by elimination of infected animals. In the first place milk samples from each cow were tested by cultural methods and the streptococci isolated were identified biochemically. It was found that all these herds were highly infected at the preliminary test and considerable losses due to the disease were sustained. Various therapeutic agents were used but " trypaflavine " was preferred and was used in the strength recommended previously [*V. B.* **5.** 397]. It was found that it was unnecessary to inject large quantities of the solution into the infected udder and that 400 c.c. was usually sufficient. He states that at the conclusion of the experiment all the herds were free from disease.

II. S. states that the best method available for the treatment of streptococcus mastitis is udder infusion. The fact that solutions used in treatment are retained in the udder constitutes a drawback to this method and for this reason he has compared the therapeutic value and the retention of various substances. The most suitable substance is " trypaflavine " which if infused according to a certain technique (a weak first injection followed by a stronger one) results in minimal retention and reduction of the milk yield of the injected quarter. The addition of saccharose to a " trypaflavine " solution is said to be beneficial. S. claims that 75% of infected quarters are successfully treated by the use of " zysternal ", a compound which contains " trypaflavine " and saccharose.—S. J. Edwards.

I. Gray, W. H., Buttle, G. A. H., & Stephenson, Dora. (1937). **Derivatives of p-Aminobenzene-sulphonamide in the Treatment of Streptococcal Infection in Mice.**—*Bio-chem. J.* **31.** 724-730. 2 tables. [11 refs.]

II. Buttle, G. A. H., Stephenson, Dora, Smith, S., Dewing, T., & Foster, G. E. (1937). **The Treatment of Streptococcal Infections in Mice with 4:4′Diaminodiphenylsulphone.**—*Lancet.* **232.** 1331-1334. 2 tables. [12 refs.]

III. Anon. (1937). **Chemotherapy of Streptococcal Infections.**—*Ibid.* 1357. [2 refs.]

IV. Whicher, A., & Smith, H. L. (1937). **Some Observations on the Use of " Prontosil " in Canine Practice.**—*Vet. Rec.* **49.** 452-453.

I. In an endeavour to find a more active drug than p-aminobenzenesulphonamide for the treatment of infections by haemolytic streptococci, a number of derivatives comprising N-acyl compounds, substituted amides and Schiff's bases, have been prepared and tested for toxicity and protective effect. p-Benzylaminobenzenesulphonamide, which has been recommended and used for the treatment of these infections, gives, in these laboratory experiments with mice, results not quite so good as those given by p-aminobenzenesulphonamide.

II. The various recently discovered substances of the sulphanilamide group with chemotherapeutic properties are briefly reviewed. It is emphasized that treatment with these substances should, except as a forlorn hope, be reserved for infections known to be due to haemolytic streptococci and meningococci and that the doses should be adequate and the effects carefully observed. Only thus can an adequate estimate of their value be obtained.

III. 4·4′ diaminodiphenylsulphone (diaminosulphone) is active in curing streptococcal infections of mice in doses of about one-hundredth of those required

with p-aminobenzenesulphonamide (sulphanilamide); it is, however, 25 times as toxic. The drug is not more toxic than sulphanilamide in normal rabbits or monkeys, except that it is more active in producing methaemoglobinaemia in the latter animal. The corresponding dinitro compound (dinitro-sulphone) is not so toxic to mice as sulphanilamide and its antistreptococcal activity in mice is not inferior to that of the latter substance. The action of diaminosulphone was tested in two monkeys and was found to be more persistent than that of sulphanilamide.

IV. A number of cases in which "prontonsil" was used are described. Favourable results were obtained in sepsis with prolapse, ulcers of the vulva and vagina, metritis and persistent nasal discharge (one case each). Several cases of "feline enteritis" showed no favourable response. A 2·5% solution was given orally or hypodermically.—J. M. Robson.

Binter, A. (1936). Rhodarsan v therapii chorob domácích zvířat. [**"Rhodarsan" in Veterinary Therapeutics**].—*Klin. Spisy Šk. zvěrolék., Brno.* **13.** 1-29. 8 charts. [Numerous refs.] [French and German summaries].

"Rhodarsan", an arsenic compound, is said to be valuable in cases of febrile catarrhs of the upper parts of the respiratory tract, in botryomycosis of the skin in horses, in mange and in distemper in dogs, and in spirochaetosis in rabbits. "Rhodarsan" has the same therapeutic effect as "neoarsenobenzol".

—E. Přibyl (Brno).

Bočarov, I. A., & Michailovskii, A. I. (1935). Kliničeskie nabljudenija po grippoziym i kontagioznym plevropnevmonijam i vlijanie na ix tecenie intravenoznyx in'ekcií novosaljvarsana. [**"Influenzal Pleuro-Pneumonia" and "Contagious Pleuro-Pneumonia" in Horses; Treatment with Neosalvarsan**]. —*Sborn. Rab. Leningrad. vet. Inst. 1935.* pp. 79-85. 2 charts.

B. and M. observed two groups of horses. The horses in the first group (39 in number) were affected with contagious pleuro-pneumonia. Each animal was given an intravenous injection of 3 g. of "neosalvarsan". 23 were treated on the first day of their illness, 14 on the 2nd day and 2 on the 5th day. In each case there was a speedy improvement with a return to normal by the 3rd or 4th day. The horses in the second group (26 in number) with "influenzal pneumonia", were also treated with "neosalvarsan", but no improvement in their condition was noted. The drug is, therefore, recommended for differential-diagnostic purposes.

Parlier. (1936). Le bi-iodure de mercure dans le traitement de la lymphangite épizootique. [**Treatment of Epizootic Lymphangitis with Mercury Biniodide**].—*Rev. vét. milit.* **20.** 387-401. 1 table. [16 refs.]

This is an account of the treatment of 22 cases of epizootic lymphangitis by intravenous injections of biniodide of mercury combined with local applications of mercurial dressings to lesions. 21 cures were obtained. P. gives full details of his technique and scale of dosage. He finds that in recently affected animals the method can be relied upon to effect a certain cure and that no danger attends the administration of this drug by the intravenous route provided that proper precautions are observed.—C. Davenport.

I. Risse, W. (1936). Behandlung der Unfruchtbarkeit mit standardisiertem Weizenkeimöl (Vitamin E) und Hormovilan bei Rindern. [**Treatment of Sterility in Cattle with Wheat Germ Oil and Hormovilan**].—*Inaug. Diss., Hanover.* pp. 72. 9 tables. [17 refs.]

II. Goes, O. (1936). Die Behandlung der Anaphrodisie bei Kühen und Färsen mit Progynon B oleosum und Si 256. [**Treatment of Anaphrodisia in Cows and Heifers with Progynon B Oleosum and Si 256**].—*Inaug. Diss., Berlin.* pp. 46. [17 refs.]

I. Ten out of 60 sterile animals conceived within 4-6 weeks following treatment with wheat germ oil; 14 out of 85 sterile animals conceived within 4-6 weeks following a single intramuscular injection of hormovilan. Sterility was due to subfunction of the ovary, persistent corpus luteum, anaphrodisia or ovarian cysts.

II. In subfunction of the ovary, persistent corpus luteum and cystic degeneration of the ovary, progynon regularly produced oestrus and readiness for gestation. One administration of the hormone not only produces oestrus, but may restore the normal oestrous cycle. " Si 256 " produces the same effects, though not so regularly, on oestrus and readiness for gestation.—J. M. Robson.

POISONS AND POISONING.

Rek, L. (1934). Otravy kyselinou štavelovou. [**Oxalic Acid Poisoning**].—*Zvěrolék. Obz.* **27.** 1-9 and 21-29. [8 refs.]

The natural cause of poisoning by oxalic acid in herbivorous animals is the eating of young sugar beet leaves. R. examined the symptoms of oxalic acid poisoning in rabbits, to which the solution of oxalic acid was administered *per os.* It was possible to prevent the poisoning by administration of calcium or magnesium hydroxide. R. gives measures for prevention of oxalic acid poisoning in animals; *i.e.*, calcium hydroxide should be added to foods containing oxalic acid. When poisoning has already occurred, the administration of calcium has no healing effect, but the application of magnesium hydroxide subcut. or intraven. showed good therapeutic effect even in the case of anuria.—E. Přibyl (Brno).

Sinkora, F. (1937). Nutná porážka koně po zkrmování denaturovaného cukru. [**Poisoning of a Horse by Sugar Denatured by the Addition of Tar**].—*Zvěrolék. Obz.* **30.** 94-96. 1 fig.

A horse was destroyed on account of severe gastro-enteritis. On P.M. examination there was gastritis which S. attributed to the effect of tar, which was added to sugar as denaturing matter. The denatured sugar had been given to the horse over a period of six weeks, at the rate of one and a half kg. per day. —E. Přibyl (Brno).

Wagener, K. (1936). Experimentelle Untersuchungen über die Lebertranfüttering und ihre Beziehungen zur toxischen Leberdystrophie der Schweine. [**Toxic Liver Dystrophy in Swine on Cod Liver Oil Diet**].—*Tierärztl. Rdsch.* **42.** 789-793. 1 table. [4 refs.]

Mortality amongst stock has occasionally been credited to bad cod liver oil, and liver dystrophy has been experimentally produced in pigs by feeding a suspected product [Bolle – *V. B.* **6.** 609]. The present paper records 10 feeding experiments with 28 pigs, comparing emulsions of suspicious and suspicion-free oils. Five of the pigs (17%) developed liver dystrophy, three cases terminating fatally within 13 days and the other two revealing lesions at P.M. examination on the 24th day. The damage, however, could not be associated with the quality or quantity of the oil, normal daily amounts of apparently objectionless oils being equally incriminated.—H. H. Green.

Franjo, B. (1937). Zastrupljenje pesnim in repnim perjem. [**Poisoning of Swine by Mangolds and Turnips**].—*Jugoslov. vet. Glasn.* **17.** 155-160.

A description of poisoning in swine fed with mangold and turnip tops. Attempts to discover the toxic principle showed that the plants generated HCN on being heated, though the symptoms were not those of poisoning by pure HCN.

Pápai, L. (1936). Sertések csicsókamérgezése. [**Pigs Poisoned by Jerusalem Artichoke**].—*Állatorv. Közl.* **33.** 77-78.

Poisoning was observed in a group of 320 pigs fed on germinated tubers of Jerusalem artichoke, sugar, rice milling and pumpkin seed cake with salt and calcium carbonate. The symptoms were staggering, vomiting, lack of appetite and diarrhoea. P.M. there was gastritis and enteritis. The pigs recovered in 2-10 days after exclusion of the germinated tubers from the ration.

—Z. de Csukás (Magyaróvár).

Quin, J. I. (1936). **Studies on the Photosensitization of Animals in South Africa. IX. The Bile Flow of the Merino Sheep under Various Conditions.** —*Onderstepoort J. vet. Sci.* **7.** 351-366. 25 figs. on 1 plate, 1 table, 5 graphs. [14 refs.] [See also *V. B.* **6.** 259].

Although a physiological bilirubinaemia does not occur in healthy merino sheep the functional activity of the liver may be readily upset by various hepatic poisons of plant origin, *e.g.* by species of Tribulus, Lippia, and different grasses. The rapidly occurring jaundice is accompanied by acute photosensitization (due to the plant porphyrin, phylloerythrin) with oedematous swelling of the unpigmented skin of the head and ears, termed yellow thick head. Except for bile pigmentation liver sections, however, reveal no significant lesions. Bile flow was studied by ligation and severing of the common bile duct and the creation of a gall-bladder fistula in sheep. The daily yield of bile amounted to 200-300 c.c. per animal. Drenching of Lippia poison provoked rapid inhibition of bile flow except for small volumes of " white bile ". Various cholagogues including bile itself failed to alleviate the symptoms of jaundice. Although drenching of bile led to increase of bile flow in unpoisoned gall-bladder fistula sheep, a steady flow was maintained even if no bile was drenched. Other liver poisons, *e.g.* phosphorus and chloroform, although producing severe fatty changes in the liver failed to provoke the same intense and persistent jaundice accompanied by photosensitization.

Parker, K. W. (1936). **Prevention of Death Losses in Sheep on Areas infested with Pingue** (*Actinea richardsoni*).—*Bull. N. Mex. agric. Exp. Sta.* No. 241. pp. 53. 18 figs., 17 tables, 1 appendix. [10 refs.]

Heavy losses occur in New Mexico from range sheep eating pingue or as it is popularly called " Colorado rubber plant ". Large scale experiments, described, gave encouraging results. They showed that the death losses could be greatly reduced by managing the sheep in such a way that on entering pingue areas they were in very good physical condition after lambing, and had a full complement of body reserves of the various necessary minerals and nutrients. This, it is maintained, prevents the depraved appetite which tempts the animal to eat the pingue, from which it appears to gain the minerals in which the surrounding herbage is deficient. The feeding of a mineral supplement also was beneficial and lowered the chances of depraved appetites in the flock. It would therefore appear that the main loss is due primarily to the mineral deficiency of the pasturage. The bulletin deals with several other aspects of sheep management

in pingue areas and an addendum is given of the flora of these areas and the palatability of well over a hundred plants – " palatability " being defined as " the degree to which the herbage within easy reach of stock is grazed when a range is properly utilised under the best practicable range management ".—J. STEWART.

PHYSIOLOGY.

BARCROFT, J., & BARRON, D. H. (1937). **Experimental " Chronic " Lesions in the Central Nervous System of the Sheep's Foetus.**—*J. Physiol.* **89.** 55P-56P. [1 ref.]

The authors compare the movements of exposed 70-day old foetuses which ten days before had been operated upon by one or other of the following methods : (1) transection of cervical spinal cord – caused reflexes to be exaggerated and the foetus to be more than normally active, (2) transection between mid-brain and pons foetus – less active than in (1), (3) transection of mid-brain – movements very jerky, and (4) transection above mid-brain – at first similar to normal but movements later jerky.—P. S. WATTS.

PALMGREN, A. (1937). Det autonoma nervsystemets centra i hjärnan och ryggmärgen. [**The Centres of the Autonomic Nervous System in the Brain and Spinal Cord**].—*Svensk VetTidskr.* **42.** 1-5. [3 refs.]

A brief summary of the subject.—H. BERTHELSEN (STOCKHOLM).

ANON. (1937). **Antibodies against Hormones.**—*Lancet.* **232.** 1471-1472. [2 refs.]

The mechanism of anti-hormone formation is discussed. It is pointed out that hormones which lead to anti-hormone formation are protein-like bodies ; to produce an antiserum, such a hormone must be injected into a different species. The results suggest that the hormonal activity may be due to a prosthetic group common to all species but independent of the determinant groups responsible for serological reactions. LOESER has recently shown that anti-thyrotropic activity is present in normal sheeps' serum and can be concentrated into a particular fraction, suggesting that an animal can form antibodies to its own protein-like hormone. BAUER and his collaborators have found that injection of thyroxine into rabbits produces a resistant state ; the serum then shows a positive complement-fixation reaction if thyroxine is used as antigen. A large proportion of the sera of human patients suffering from hyperthyroidism give this complement-fixation reaction with thyroxine. The sera of thyroxine-resistant rabbits does not confer resistance on normal animals. Not only thyroxine, but also di-iodotyrosine, adrenalin, sympatol, insulin, tyrosine and phenol can act as antigens, the suggestion being that the phenol group is the centre of a group of more or less non-specific serological reactions.—J. M. ROBSON.

TECHNIQUE.

NEUMANN-KLEINPAUL, K., & WEYERS, H. (1936). Ein Blutschema für Pferdeblut. [**Haematological Scheme for Horse Blood**].—*Arch. wiss. prakt. Tierheilk.* **71.** 89-90. 1 fig.

The standard chart used for recording the results of haematological examinations of horse blood at the medical clinic of Berlin Veterinary School is illustrated and discussed briefly. It is suggested that all veterinary clinics should adopt it, to end the unsatisfactory diversity of methods now in use.—J. E.

PLUM, P. (1936). **Accuracy of Haematological Counting Methods.**—*Acta med. scand.* **90.** 342-364. 12 figs., 4 tables. [Numerous refs.] [Copied *verbatim* from *Trop. Dis. Bull.* **34.** 254. Signed H. H. S.]

This article is of fundamental importance and does not admit of abstract. Haematologists should consult the original. The author begins with an historical sketch of the development of blood-counting methods during the past hundred years and discusses their accuracy or want of it, the errors being due either to unequal distribution of the corpuscles in the counting chamber or smear, or to faulty measuring of the blood and diluent. He shows by experiment that the former of these plays the chief part in errors of individual counts, whereas the latter plays a relatively small part. The mean error in counting-chamber counts is equal to the square root of the number of cells counted; the mean error in differential count on a smear regarded as properly made may be calculated by Bernouilli's theorem $m = \sqrt{n.p.q}$. He gives a diagram of the calculated mean error in differential counts of 100 to 1,000 leucocytes.

IRDELP, N. O., GUCHAN, M., & UGAN, C. (1937). Nouveau procédé de prélèvement du sang pour hémoculture basé sur l'utilisation de la spléno-contraction adrénalinique dans la fièvre typhoïde. [**A New Method of obtaining Blood Cultures from Cases of Typhoid Fever**].—*Pr. méd.* Feb. 3rd. 174-175. 1 table.

ANON. (1937). **Bacteria Chased into Blood Cultures.**—*Lancet.* **232.** 580. 1 table. [1 ref.]

In 49 cases of typhoid fever, blood cultures were taken before and 15 to 20 minutes after the injection of 1 mg. of adrenalin hydrochloride. The adrenalin presumably by causing the spleen to contract expels organisms into the circulating blood. It was found in 103 blood cultures from the above patients that the injection of adrenalin increased the number of positive cultures, especially in the third week of the disease.—D. L. HUGHES.

CARREZ, M. (1937). Appareil de fixation à demeure d'un thermomètre à maxima pour les prises de température vaginale. [**Uninterrupted Long Period Thermometry in Animals**].—*Bull. Soc. vét. prat. Fr.* **21.** 26-30.

A maximum-registration thermometer, which can be retained in the vagina over a lengthy period, has obvious advantages in connexion with the tuberculin test (subcut.). C. describes the apparatus which he has invented for this purpose. He claims that it can be employed without inconvenience to the cow or risk of breakage to the thermometer and that it remains in position irrespective of movement of the animal.—C. DAVENPORT.

MISCELLANEOUS.

CURSON, H. H. (1935). **Matters of Veterinary Interest 1795-1881.**—*J. S. Afr. vet. med. Ass.* **6.** 79-107, 196-218 and 274-296. 12 figs., 1 table, 7 photographs, 5 photographs on one plate. [Numerous refs.]

C. briefly outlines the history of the veterinary profession in South Africa up to the date of the creation of civil departments. The early history is mainly associated with army veterinarians (of the first 45 men of the profession to enter South Africa, 36 were army officers). The early veterinary history of the Cape Colony is given, and mention made of BURROWES, the pioneer of veterinary science in South Africa. The association of veterinarians with the development of horse-

breeding is referred to. The years 1840-1881 cover a period of great unrest in the history of South Africa. During this period, contagious bovine pleuro-pneumonia appeared and caused very heavy losses. By 1881 departmentalization of the Army Veterinary Service was complete. In the final portion of the article C. gives a list of papers on veterinary subjects published by veterinarians in South Africa between 1826 and 1881 and refers to the legislation introduced in the Cape Colony and Natal to deal with stock diseases. The article is dedicated to the memory of Sir Frederick Smith and in the preface a tribute is paid to the work of Duncan, Hutcheon and Theiler.—E. M. Robinson.

Kearney, W. (1936). **Veterinary Research in the Irish Free State.**—*Vet. Rec.* **48.** 1123-1129. 2 tables. [1 ref.]

K. gives estimates for the value of farm livestock and the annual monetary losses from disease in the I.F.S. and then shows that the state veterinary staff is inadequate for dealing with preventable losses and undertaking veterinary research. In 1936 there was only one active veterinary research worker. Corresponding calculations for Great Britain and Northern Ireland show the unsatisfactory position of the I.F.S.—J. E.

Anon. (1936). Conférence consultative de l'élevage, Gouvernement général de l'Afrique occidentale française, Dakar, 25-30 mars, 1936. [**Conference on Animal Husbandry (including Animal Diseases), Dakar, French West Africa, March, 1936**]. pp. 231. 10 tables. Gorée: Imprimerie du Gouvernement général. [8vo].

The conference was called to discuss the position of animal husbandry and diseases in French West Africa, and for the framing of proposals for their improvement.

Part I deals with livestock disease. Part II concerns animal husbandry and is not dealt with here. G. Curasson, Inspecteur général de l'Elevage, gave addresses on (1) the veterinary laboratories and the veterinary school of A.O.F.; (2) the organization of fixed and mobile centres for the preparation of sera and vaccines; (3) methods of immunization against rinderpest and contagious bovine pleuro-pneumonia, and (4) regulations for the control of animal diseases.

He made numerous recommendations, but the report contains no record of any decision taken by the authorities to put them into force. The addresses ought to be read in the original; however, the main points are as follows:—

(1) Laboratories.—C. suggested that the existing ones at Dakar [headquarters of the veterinary service of A. O. F.] and Bamako, in French Sudan, should serve all the colonies collectively and that the remainder should serve the colonies in or near which they are situated. Thus – St. Louis for Senegal and Mauritania, Niamey for Niger, Pasteur Institute at Kindia for French Guinea, Bouaké for Côte d'Ivoire and Parakou for Dahomey. Budgets for these institutions are given.

(2) Immunization Centres.—Recommendations made by the veterinary officers in charge of the several colonies are discussed by Curasson. No final decision is given. A certain number of immunization stations and properly equipped lorries (for preparing vaccine in the field) are proposed, some being already in existence.

(3) Immunization against Rinderpest and Contagious Bovine Pleuro-Pneumonia.—C. has produced formolized tissue extract vaccines against both diseases and they have been widely used in A. O. F. [This section has been abstracted separately – see p. 26].

(4) Control of Animal Diseases.—C. discussed the principles involved in limiting the spread of disease into and out of A. O. F. and between the colonies of A. O. F., citing certain decrees pertaining to the latter. With regard to trade with Nigeria and the Gold Coast, the French at present undertake to supply disease-free but not rinderpest-immune animals ; they have been unable to effect wide-scale immunization against rinderpest, as in the Gold Coast, because of staff shortage. It is expected that it will be achieved within 2 or 3 years, so that the danger of passage of rinderpest into the British colonies will in time be removed. —J. E.

Guyot, L. A. (1936). Le service vétérinaire de la division Cochinchine-Cambodge. **[The Veterinary Service in Cochin-China and Cambodia]**.—*Thesis, Lyons*. pp. 66. 3 tables.

By a government order of 1934, the veterinary service of Cochin-China is under the control of the military authorities and the responsible veterinary posts are military ones. Thus the Principal Veterinary Officer is a Veterinary Commandant, stationed at Saigon ; there is also a Veterinary Captain at Cap-Saint-Jacques. The former directs the Ecole de Maréchalerie at Saigon.

In Cambodia the veterinary work is done by a civil veterinary officer (at Phnom-Penh) and by indigenous veterinarians.

The remount service and the types of equines, their general care, diet, and diseases are described. Of the latter mention is made of a kind of forage poisoning, osteodystrophia (now uncommon), canker of the foot, glanders (rare), strangles, surra, cutaneous habronemiasis and other diseases.—J. E.

Kondič, K. (1936). Veterinarske konvencije i njihov privredno-politički značaj. **[The Economic and Political Significance of Veterinary Conventions]**.—*Jugoslov. vet. Glasn.* **16.** 401-406 and 443-450.

The main purpose of veterinary conventions is the prevention of the introduction of contagious animal diseases. They are either limited to commercial agreements or are independent contracts. They are effective usually for only a short time so that they can be easily changed if necessary. Unfortunately, the conventions are not always the result of economic considerations but are often influenced by certain political considerations.

The following states have agreed to make conventions with Yugoslavia:– Austria, Italy, Germany, Hungary, Czechoslovakia, Rumania, Greece, Albania and Bulgaria.

A special permit from the government with which no convention has been made is required for the export of livestock or of animal by-products to or through a state.

The following measures are usually contained in a convention : (1) certificate of origin, ownership and health of livestock ; (2) certificate of origin, ownership and wholesomeness of an article derived from animals ; (3) certificate of ownership and origin of materials which can become vectors of animal contagious diseases ; (4) veterinary certificate of examination of livestock before leaving the station or port of export ; (5) certificate of the frontier veterinary inspector ; (6) return of article either on account of an accident in transport, or because of an outbreak of an animal disease as provided for in the convention ; (7) either partial or complete closure of frontiers on the outbreak of certain specified animal contagious diseases in the exporting country ; (8) establishment of frontier quarantines ; (9) inspection of stables, markets and abattoirs at the exporting stations and ports ; (10) enforcement of the regular execution of veterinary measures in the exporting state ;

(11) regulation of the movements of livestock in frontier pastures; (12) issue of fortnightly bulletins showing the incidence of animal contagious diseases in each country; (13) disinfection of waggons and ships; (14) guarantee of competence of veterinary representatives attached to foreign governments, and (15) uniform organization of the veterinary services and administration of animal contagious diseases control acts.—B. Oswald (Split).

United States of America. (1936). **Yearbook of Agriculture, 1936.** pp. 1189. Numerous figs. and tables. [Numerous refs.] Washington D. C.: Govt. Printing Office. [8vo] [$1.25].

This year instead of giving a summary of new developments in agricultural practice, the yearbook is devoted to articles describing the principles and results of selective breeding of animals and plants, each section being written by a separate authority.

Apart from chapters on general subjects, there are seven on farm animals, accounts being given of the different problems and conditions of the United States.

Agricultural statistics are given in a separate volume.—J. E.

Torres, S. (1936). Alimentaçoã de morcegos hematophagos em captiveiro. [**Feeding of Vampire Bats in Captivity**].—*Folha vet., Brazil.* **1.** 49-51. [English summary].

T. gives tests of feeding bats in captivity, for purposes of experimental investigations, with defibrinated blood, blood with sodium citrate or sodium oxalate, and with other diets of egg albumen, defibrinated blood, gravy and glucose saline.

OFFICIAL AND OTHER REPORTS.

Canada. (1937). **Report of the Veterinary Director General, for the Year Ending March 31, 1936.** [Hilton, G.] pp. 63. Numerous tables, 3 appendixes. Ottawa: J. O. Patenaude. [8vo].

Over two and a half million cattle or approximately 30% of the cattle in the Dominion are now under the department's policies for the control of Bovine Tuberculosis. Areas in which the percentage of cattle infected with TB. does not exceed one half of one per cent. are declared accredited areas for a period of 3 years, and areas in which the percentage does not exceed two tenths of one per cent. are accredited for 6 years. There are approximately 520,000 cattle in areas now accredited. Definite progress is being made in the control of TB. and the general incidence of this infection in cattle throughout the Dominion is being substantially reduced.

Brucella abortus Infection was brought under the provisions of the Animal Contagious Diseases Act, to permit of more effective control measures, but was exempted from provisions which require compulsory action. Regulations were passed providing for the permanent marking of cattle, excepting unbred yearlings and calves, which have reacted to the blood test, and prohibiting the import of animals so marked. Herds under supervision and in which no reactors are found for a period of one year may be listed upon request. The desirability of developing an area plan for the more effective control of this disease is stressed.

[The reports of the Contagious Diseases Division, the Meat and Canned Foods Division, the Pathological Division, the Poultry Pathology Laboratory, and articles on the aggl. test as applied at the Animal Diseases Research Institute, the Progress Report of the Investigation of Bovine Haematuria in British Columbia

and Studies Relative to the Permanency of *Br. abortus* infection which are included in this report are dealt with elsewhere in this *Bulletin*].—E. A. WATSON.

CANADA. (1937). **Report of the Pathological Division, 1935-1936.** [WATSON, E. A.]—*Rep. vet. Dir. Gen. Dep. Agric. Can., 1935-1936.* pp. 38-63. 1 table, 3 appendixes.

LABORATORY SERVICES AND BIOLOGICAL PRODUCTS.—Tuberculin, mallein, johnin, *Brucella abortus* antigen and anti-distemper serum are prepared at the Animal Diseases Research Institute, Hull, and the quantity of each product issued is stated. Diagnostic services are conducted at the Institute and Branch laboratories. The nature and extent of these services, specimens examined, etc. are indicated. There are shown in tabulated form the results of 117,788 serological tests for *Br.a.* infection (" Bang's disease " of cattle). The total number of cattle tested was 58,207, the percentage of reacting animals being 2·48, subdivided as follows :- calves to 6 months of age, 0·69 ; virgin heifers, 0·47 ; males over 6 months of age, 0·47, and cows, 3·17.

RESEARCH.—The principal research studies were related to the following diseases :- distemper in fur-bearing animals, Johne's disease, bovine contagious abortion, infectious mastitis, tuberculosis, and bovine haematuria. Brief references are made to these studies and the nature of the work in progress. Three appendixes follow the main report under the titles of (1) The Agglutination Test for *Br.a.* infection as applied at the Animal Diseases Research Institute, Hull, Que. ; (2) Progress Report on the Investigation of Bovine Haematuria (Redwater) in British Columbia, and (3) Studies relative to the Permanency of *Brucella abortus* Infection. [These are dealt with separately in this *Bulletin*].—E. A. WATSON.

CANADA. (1937). **Report of the Contagious Diseases Division, 1935-1936.** [CAMERON, A. E.]—*Rep. vet. Dir. Gen. Dep. Agric. Can., 1935-1936.* pp. 9-31. 20 tables.

No cases of ANTHRAX, DOURINE, GLANDERS, SHEEP SCAB or RABIES have occurred. There were three small outbreaks of suspected SWINE FEVER involving the slaughter of 43 animals.

TUBERCULOSIS.—ACCREDITED HERDS. As a result of 276,733 tuberculin tests, 3,499 reactors were slaughtered at a compensation cost of $131,904·33. There are 7,273 fully accredited herds, 1,378 undergoing accreditation, and 113 awaiting test. SUPERVISED HERDS. This section deals with herds of grade cattle which cannot qualify for the accredited herd plan. No compensation is paid for reactors to the tuberculin test. Herds tested numbered 44,053. A table gives detailed figures and shows 3,532 reacting animals. RESTRICTED AREAS. Tuberculin tests of cattle, 498,520 ; reactors, 13,571 ; compensation cost, $337,566·48. Details are given in tabulated form. Another statistical table gives, by province, county, municipality and district, the number of cattle tested and the number and percentage of reactors, from year to year, up to March 31st, 1936.

MISCELLANEOUS.—The feeding of garbage to swine is controlled by licence and regulation. Dairies and cattle supplying milk for export to the United States are under veterinary inspection. Permits are issued to shipping plants.

Cattle for export to Great Britain are held under supervision, inspected and tagged ; and cattle for breeding or milk production are submitted to the tuberculin test and the blood test for *Brucella abortus* infection. Cattle reacting to either test may not be exported from Canada.

Stock cars and yards are inspected at 28 railway centres, and their cleaning and disinfection is carried out under supervision.

Appended to the report are Extracts of Orders in Council and copies of Ministerial Orders issued during the year ; various tables giving statistical information on the numbers and classes of animals dealt with for different diseases ; details of animals slaughtered and compensation paid, and of inspection of animals imported and exported.—E. A. Watson.

Canada. (1937). **Report of the Meat and Canned Foods Division, 1935-1936.** [Barnes, R.]—*Rep. vet. Dir. Gen. Dep. Agric. Can. 1935-1936.* pp. 32-37. 4 tables.

Establishments operating under the Meat and Canned Foods Act are listed. The report shows the number of cattle, sheep, swine and other animals slaughtered, the number and percentage of carcass condemnations, the sex of the cattle slaughtered, the dressed weight of animals slaughtered, and the kind and quantity of meat products exported and imported. Carcass condemnations are shown as 1·34% of slaughtered cattle, 0·24% of sheep, and 0·31% of swine. The various diseases and conditions found at establishments under inspection are listed and tabulated for cattle, sheep, swine and poultry.—E. A. Watson.

Canada. (1937). **Report of the Poultry Pathology Laboratory, 1935-36.** [Weaver, C. H.]—*Rep. vet. Dir. Gen. Dep. Agric. Can. 1936.* pp. 60-63. 2 tables.

Routine Laboratory Service.—A tabulated autopsy report shows the number and percentage of the different diseases observed in 1,568 specimens. Aggl. tests for the detection of carriers of *Salmonella pullorum* infection totalled 18,023.

Research.—Mention is made of blood studies relating to leucosis, as well as to normal fowls ; immunity experiments with the embryonated eggs of different species of nematode infesting fowl ; and studies on the life-history of capillarid worms. Microfilaria were observed in the blood of a gosling which carried a leucocytozoan infection.—E. A. Watson.

India, Baluchistan. (1936). **Report on Veterinary Affairs in Baluchistan, 1934-35.**—*Adm. Rep. Baluchistan Agency, 1934-1935.* pp. 112-119. 9 tables.

Budget.—The total cost was Rs.65,416 (£4,906).

Animal Diseases.—There were 26 outbreaks of Rinderpest, 20 of Foot and Mouth Disease, three of Blackleg, four of Anthrax, 18 of Sheep Pox, 59 of Sheep and Goat Mange, and seven of Camel Mange. Rabies was diagnosed in one horse and in one other animal.

Preventive Inoculations.—2,445 cattle were immunized by serum alone against rinderpest.

Hospitals and Dispensaries.—30,600 animals were treated in 10 dispensaries and 310 were castrated. 58,400 animals were treated by 12 veterinary assistants on tour and 22 were castrated.—J. E.

Kenya Colony and Protectorate. (1936). **Report of the Deputy-Director (Animal Industry) and Chief Veterinary Officer.** [Brassey-Edwards, H. H.]—*Rep. Dep. Agric Kenya, 1934.* I. pp. 114-145. 17 tables.

This year's report has been considerably curtailed and only gives general information.

Animal Diseases.—Tables are given showing the number of outbreaks of the important diseases in the settled areas and in the native reserves. The following

outbreaks occurred in settled areas :– 68 of Rinderpest, 83 of East Coast Fever, 4 of Contagious Bovine Pleuro-Pneumonia, 58 of Blackleg, 29 of Anthrax, 15 of Ulcerative Lymphangitis, 3 of Trypanosomiasis, 26 of Foot and Mouth Disease, 14 of African Horse-Sickness, 29 of Swine Fever and 11 of Rabies. Bovine Brucellosis was found in 19 herds. Rinderpest increased and was controlled by quarantine and inoculations. Spleen virus replaced blood virus in this work. 51,672 cattle were immunized by serum and virus, 9,029 with vaccine and virus, 2,407 with vaccine and 215 with serum alone in the settled areas. Corresponding figures for native reserves were 46,701, nil, 63,200 and 657.

E.C.F. was less prevalent than in 1933. Control by fencing and dipping is the policy of the department, but financial difficulties have prevented its general adoption. Cont. bov. pl.-pn. only broke out three times in the settled areas and 82,236 cattle were vaccinated [no details]. Trypanosomiasis caused little trouble. The settled areas are free from tsetse flies.—J. E.

Kenya Colony and Protectorate. (1936). **Report of the Chief Veterinary Research Officer for the Year 1934.** [Daubney, R.]—*Rep. Dep. Agric. Kenya, 1934.* **3.** 2-32. 9 tables.

Details are given of the staff and expenditure and tables illustrate the routine diagnostic work done and the production of sera and vaccines.

Research. 8 grade Ayrshire cattle which had been immunized against Rinderpest (3 twice, on 26/6/29 and on 7/1/32 and 5 once, on the latter date) by inactivated vaccine were tested for immunity two and a half years later by exposure in an infected shed. All of the former group and two of the latter group withstood the test, whilst the other three (2-month-old calves at the time of vaccination) contracted rinderpest. Work on two strains of virus, one considered to be relatively weak and transmitted by eland and the other strong and transmitted by buffalo and wart-hog, gave inconclusive results. Three cases of supposed break-down in immunity in herds previously vaccinated are reported. Infection is said to have come from a wild buffalo. An *ad hoc* experiment on one test animal and one control showed that immunity acquired by vaccination was not affected by the development of an abscess at the site of inoculation. Sarnowiec's test was applied to rinderpest with negative results. Preliminary tests of intradermal vaccination gave promising results and are being continued.

Haemorrhagic Septicaemia was transmitted by fleas from a naturally infected calf to one of many mice tested, and infection was returned thence to a healthy calf which reacted and became immune.

Bovine Brucellosis was present to the extent of 21% (average) in many herds tested. Numerous items from research data are described ; chemotherapy with " contramine " and " S.U.P. 36 " and shock therapy with T.A.B. vaccine were found to be useless. Six Kenya brucella strains were typed with English strains and were found to be *Br. abortus*.

Preliminary tests of new drugs against Trypanosomiasis are described. Various drugs were tested unsuccessfully against East Coast Fever. An attempt to attenuate African Horse-Sickness virus by passage through mice had not been successful even after 64 passages, but a formolized vaccine was of value in immunizing horses. 17 jackal and 5 dog brains were positive for Rabies on examination.

East African Swine Fever virus was recovered continuously for a month from a pig which had recovered from a natural infection. A sporothrix-like organism was isolated from lesions of " Uasin Gishu " Skin Disease of horses, which is characterized by " finger-like growths " from the skin. Turning Sickness was investigated but transmission tests all failed.

Short notes are also given on foot and mouth disease, contagious bovine pleuro-pneumonia, streptothricosis, roup, respiratory diseases of sheep, sheep scab and mange, ticks, myiasis, bovine sterility and sweating sickness. It has been found that baker's yeast is a cure for sweating sickness of calves.—J. E.

PALESTINE. (1937). **Report of the Chief Veterinary Officer for the Year ending March, 1936.** [SMITH, J. M.] —*Rep. vet. Serv., Dep. Agric. Palestine, 1935-1936.* pp. 5-30. 2 tables.

The year under review has been a good one for village livestock, there being plenty of stubble tibn and grain for feeding up to the fall of the rains. With the exception of Beersheba District and in the vicinity of the Jordan valley, sufficient rain fell to produce natural grazing for a longer period than usual.

ANIMAL DISEASES. 72 outbreaks of ANTHRAX were reported, in which 770 animals died. 17,165 vaccinations were carried out. The scheme for the control and eradication of TUBERCULOSIS in cattle which was submitted last year has now been considered by government and arrangements will be made to carry out a survey next year. 89 herds are now regularly tested in connection with the control and eradication of BOVINE CONTAGIOUS ABORTION. Seven cases of EPIZOOTIC LYMPHANGITIS were reported. Control measures for DOURINE involved the testing of some 3,519 horses, with positive results in 62 cases; infected stallions are castrated and infected mares are branded, and breeding is prohibited. The country has remained free from FOOT AND MOUTH DISEASE since September, 1933. There were 37 outbreaks of SHEEP POX and GOAT POX; 4,408 animals were affected, and the mortality was 5%. A marked increase occurred in the incidence of RABIES during the year; 16,426 stray dogs, cats and jackals were destroyed; 614 suspected rabid animals were placed under observation and 17 developed rabies. The benefits accruing from dipping in the control of TICK-BORNE DISEASES are now realised and appreciated by settlers who have constructed ten cattle dipping tanks during the year, making a total of 21 in the country. It is anticipated that additional tanks will be erected next year. Demonstration dipping of sheep and goats was carried out at 19 centres and native stock-owners are becoming convinced of the value of regular dipping. The issue of government loans to groups of villages for the construction of permanent concrete sheep dipping baths was also continued; 8 such baths were provided, apart from 6 constructed by other means, making a total of 19 sheep baths. Sheep dipping powder for the first season's dipping was issued gratis.

Several outbreaks of infectious and contagious diseases of poultry occurred; the majority among poultry kept under backyard or primitive conditions. Fortunately they did not spread to such an extent as to assume serious epidemic proportions, although several individual poultry-keepers' losses were grave. An unknown virus disease of fowls occurred in Haifa and Tulkarm Sub-Districts which caused a sudden and rapid mortality amounting in some cases to 80%.

ANIMAL QUARANTINE SERVICE.—The main quarantine station is at Haifa. 277,903 animals passed through this station. Fourteen land frontier stations received 241,921 animals.

ABATTOIRS.—Veterinary surgeons carried out meat inspection in 13 abattoirs and in 20 others trained meat inspectors were employed. A total of 365,814 animals were slaughtered under this inspection.

ANIMAL HUSBANDRY.—An account is given of the work done by the department.

PALESTINE. (1937). **Government Veterinary Laboratory. Report of the Veterinary Pathologist [1935-1936].** [GILBERT, S. J.]—*Rep. vet. Serv., Dep. Agric. Palestine, 1935-1936.* pp. 31-36.

Government Veterinary Laboratory.—A total of 36,166 specimens was examined. Various vaccines and antisera were prepared. Over 4,514 specimens were examined in accordance with the free diagnosis service. 146 of 26,362 blood samples received in connexion with the department's control scheme were positive for *Brucella abortus*, and 270 of 2,300 private samples and 35 of 2,058 samples from cattle in quarantine were also positive.

62 of 3,519 samples of horses' blood were positive (c.f. test) for Dourine and 207 of 358 samples of material were positive for Anthrax. Seven cases of Epizootic Lymphangitis were detected.

Fowl Pox, Fowl Cholera and Fowl Typhoid were all diagnosed.

Pulpy Kidney Disease of Lambs occurred in 10 flocks comprising some 2,337 sheep, of which 70 are reported to have died. One outbreak also occurred in a flock of goats numbering 163 head. The usual symptoms were observed and 33 goats died. No reference to this disease in goats has been seen in any literature except in memorandum A of the Agricultural Research Council (Committee on Braxy-Like Diseases of Sheep) in the *Vet. Rec.* (1935). **14.** 424, where it is stated that pulpy kidney disease may affect goats. A vaccine prepared by the laboratory was extensively used in all the outbreaks and since then 53,150 c.c. were issued. Calf Diphtheria was diagnosed in one calf.

Research.—Investigations in connexion with the production of a potent antiserum from sheep and cattle against Pulpy Kidney disease have been carried out.

Outbreaks of a hitherto unknown virus disease of fowls [cell-inclusion disease – *V. B.* **5.** 423.] proved to be due to a virus, occurred in the Northern District. The lesions did not resemble either those of Fowl Plague or Newcastle Disease. —J. M. Smith.

Trinidad and Tobago. (1937). **Report of the Veterinary Division, 1936.** [Metivier, H. V. M.]—*Adm. Rep. Dir. Agric. Trin. Tob., 1936.* pp. 49-52.

Staff.—The veterinary officer previously stationed in Tobago was transferred to Trinidad and a new additional veterinary officer was appointed in his place making the total staff three.

Proclaimed Diseases.—Seven cases of Anthrax occurred and 494 Venezuelan cattle were vaccinated against it on importation. 15 cases of Tuberculosis were seen and slaughtered, the in-contact cattle being tuberculin-tested with negative results. There were 217 cases of paralytic rabies, mostly in cattle and in the Northern Area. 7,500 animals were vaccinated and 4,000 *Desmodus* bats were destroyed. Negri bodies were found in the brains of 98 of 1,780 bats examined. There were no cases of Glanders, Epizootic Lymphangitis, Foot and Mouth Disease, Swine Fever or ordinary Rabies.—J. E.

Holland. (1936). Verslag van den werkzaamheden der Rijksseruminrichting over 1935. [**Report of the State Serum Institute, Rotterdam, 1935**]. [Lourens, L. F. D. E.] pp. 88. 2 figs. on 1 plate, numerous tables. 'S-Gravenhage: Algemeene Landrukkerij. [8vo] [Fl.1].

The report includes statistical information on routine diagnosis, the issue of vaccines, sera and diagnostic agents, topical notes on disease conditions of general interest and reports of diseases investigated.

A total of 3,644 kg. of sera and vaccines was issued for use on 1,500,000 animals, 5,500 samples of material were examined for diagnosis and 10,800 miscellaneous diagnostic tests were carried out apart from work on tuberculosis and Johne's disease. 11 % of 6,223 bovine lung mucus samples and 13·3 % of 947 milk samples were positive for TB. and the causal organism of Johne's disease was

found in 24·3% of 1,212 samples of material. Notes are given on the intradermal johnin test and on Rinjard's method of conferring premunition for that disease. No case of rabies was observed.

Long discussions on factors influencing immunization against swine erysipelas and on formol vaccines against swine fever are given.

Among the subjects investigated mention may be made of paralysis in horses apparently due to sugar beet and to linseed, alcohol poisoning of cattle fed on a fermenting feed mixture, and paralysis of young pigs. In none of the above cases was the cause proved conclusively.

In order to test whether pea meal denatured with methylene blue might be dangerous to pigs and poultry, amounts of methylene blue which would be ingested by these animals fed for 100 days on the meal were given to ten fowls and six young pigs during a period of one month ; they all remained well. H. E. Reeser, contributes an article on blood groups in horses and cattle, reviewing the literature and giving the results of his tests on 50 serum producing horses : he found that 32 of them belonged to the XY group of Schermer.—J. E.

Levant. (1937). Extrait du rapport sur le fonctionnement du laboratoire de recherches du service vétérinaire des troupes du levant pendant l'année 1936. [**Report of the Army Veterinary Research Laboratory of the Levant for 1936**]. [Pigoury].—*Rev. vét. milit.* **21.** 89-94.

The article is devoted to original research and the laboratory examination of specimens. Glanders provided one case only for investigation. This had given three doubtful reactions to the mallein test. No lesions were discoverable on P.M. examination. Anthrax was prevalent during the autumn months, 33 cases being confirmed at the laboratory. Vaccination was resorted to for its control. Abortion due to brucella was prevalent among goats. Tuberculosis of cattle appears to be rare, a single case only coming under investigation. Eleven examinations of canine brains were made for Rabies with 2 positive results. Dourine is spreading and its diagnosis gave much trouble. Trypanosomiasis was met with among camels only. For the treatment of Piroplasmosis in horses and cattle " gonacrine " was employed with good results. A single case of Leishmaniasis in the dog and one of Epizootic Lymphangitis in the horse came to notice.—C. Davenport.

Aberdeen (City). (1936). [**Report on**] **Veterinary Services for 1935.** [Howie, G.]—*Rep. med. Offr Hlth Aberd., 1935.* pp. 69-73. 4 tables.

Aberdeen (City). (1937). [**Report on**] **Veterinary Services [1936].** [Howie, G.]—*Rep. med. Offr Hlth Aberd., 1936.* pp. 64-68. 4 tables.

Edinburgh (City and Royal Burgh). (1936). **Annual Report of the Veterinary Department for the Year 1935.** [Gofton, A.] pp. 19. 6 tables. [8vo].

Edinburgh (City and Royal Burgh). (1937). **Annual Report of the Veterinary Department for the Year 1936.** [Gofton, A.] pp. 20. 6 tables. Leith : Mackay's. [8vo].

Belfast (County Borough). (1936). **Report of the City Veterinarian for the Year 1935.** [McLean, A.] pp. 10. 11 tables. Belfast : S. C. Allen & Co. Ltd. [fcp].

Blackburn (City). (1937). **Report of the Veterinary Inspector for 1936.** [Burndred, E. J.]—*Rep. Hlth City Blackburn, 1936.* pp. 56-84. 14 tables.

Bolton (County Borough). (1937). **Annual Report of the Veterinary Officer [for 1936].** [Holmes, R. P.]—*Rep. med. Offr Hlth Bolton 1936.* pp. 73-85. 7 tables.

Liverpool (City). (1937). **Report of the Chief Veterinary Officer for 1936.** [Matthews, H. T.] pp. 37. 9 tables. Liverpool : C. Tinling & Co. Ltd. [8vo].

MANCHESTER (CITY). **[Report of] Veterinary and Milk Control Section [for 1936].** [LOCKE, R. C.]—*Rep. Hlth City Manchr., 1936.* pp. 58-68. 9 tables.

MANCHESTER (CITY). (1937). **Report of the Markets Committee for the Year ending 31st March, 1937.** [CHADWICK, A.] pp. 25. 24 tables, 1 appendix. Manchester: Henry Blacklock & Co. Ltd. [8vo].

NEWCASTLE-ON-TYNE (CITY AND COUNTY). (1937). **Annual Report of the Veterinary Officer for the Year 1936.** [PARKER, T.] pp. 30. 18 tables. Newcastle-on-Tyne: R. Ward & Sons, Ltd. [8vo].

	Milk Supply. Number of herds supplying milk (Cols. 1-4).										
	T.T.		Accredited.		Pasteurized.		Registered Herds/Shops.		Milch Cow Census.		
	1		2		3		4		5		
Aberdeen 1935		15D				20D	22P		404		
Aberdeen 1936		15D				21D	22P		399		
Edinburgh 1935	1		2				62P		1,727		
Edinburgh 1936	1		2				59P		1,585		
Belfast 1935							64P		1,000		
Blackburn 1936		1D	17P	12D		2D					
Bolton 1936	2P		5P			2D	122P		2,662		
Liverpool 1936	1P		58P				235P		3,230		
Manchester 1936	1P	58D	11P	41D		23D	58P		1,500		
Newcastle 1936							22P		515		
Preston 1936	—	4D	2P	24D	2P	3D	19P	112D	560		
Sheffield 1936	1P		9P				153P		2,000		
Stoke-on-Trent 1936		8D	21P	44D		19D	148P		848		

NOTE. P = Producer in the Urban district: D = Dealer in town supplied by farms outside the towns.

A blank denotes " no information "; a dash denotes " no cases observed ".

Column 4 refers to approved milk producers and/or retailers supplying milk to the urban population.

Column 5 refers only to cows within the urban district.

Double figures linked by + = not clear whether the smaller number is included in the larger.

ADDITIONAL NOTES.

ABERDEEN. Veterinary Staff – two.

EDINBURGH. Veterinary Staff – four. Information given on market and seaport foodstuffs, traffic and abattoir work.

BELFAST. Veterinary Staff – one. Abattoir statistics given.

PRESTON (COUNTY BOROUGH). (1937). **Report of the Veterinary Officer for 1936.** [FINCH, R.]—*Rep. Med. Offr Hlth Preston, 1936.* pp. 53-72. 1 appendix, 2 tables.

SHEFFIELD (CITY). (1937). **Annual Report of the Chief Veterinary Officer for the Year 1936.** [SALUSBURY, H. M.] pp. 15. 18 tables. [fcp].

STOKE-ON-TRENT (CITY). (1937). **Annual Report on the Work of the Veterinary Officer for the Year, 1936.** [MANLEY, F. H.] pp. 12. 3 tables. Stoke: J. G. Fenn, Ltd. [8vo].

			Meat Inspection. Whole carcasses.		Notifiable Diseases (Still prevalent).					
Samples tested for TB.	Number tuberculous.	Number of TB. udders.	Tuberculous bovines.	Tuberculous pigs.	Bovine TB. (incl. Col. 8).	Anthrax.	Foot and Mouth disease.	Swine Fever.	Mange.	Sheep Scab.
6	7	8	9	10	11	12	13	14	15	16
242	33	–	210	30	1					
365	48	4	267	20	7					
372	15 + 7	7	1,897	93	14	1	–	–	–	–
322	13 + 6	8	2,389	104	16	1	–	5	–	–
			399	42	9					
326	14	4	987	572	8	1	–	–	–	–
124	2 + 9	5	1,142	671	13	1	–	–	–	
313	46	44			88	1	–	3	5	–
031	124	10	836	127	2	2		2	4	
17	15	5	241	58	6	2	–	1	–	–
438	26	28	207	57	91	–	–	–	1	–
+ 152	34	20	552	68	94	–	4	10	1	–
506	42	22	343	89	61	–	–	2	1	–

BLACKBURN. Veterinary Staff – one. Abattoir statistics given.

BOLTON. Veterinary Staff – one. Abattoir statistics given.

LIVERPOOL. Veterinary Staff – three. Information given on the Corporation working horses and farm.

MANCHESTER. Veterinary Staff – five. Incidence of tuberculous infection in milk sold in Manchester between 1901 and 1936 is given. Market and abattoir statistics given.

NEWCASTLE. Veterinary Staff – two. Number of diseased cows found in registered premises in the city given for 1907-1937; also number of outbreaks of scheduled diseases for the same period.

PRESTON. Veterinary Staff – one.

SHEFFIELD. Veterinary Staff – three. Abattoir statistics given.

STOKE. Veterinary Staff – one.

STAFFORDSHIRE (COUNTY). (1936). **Annual Report of the Veterinary Department for the Year 1935.** [DAVIDSON, F. A.]—*Rep. med. Offr Hlth Staffs., 1935.* pp. 82-109. 9 tables.

CUMBERLAND (COUNTY). (1937). **Annual Report of the County Veterinary Officer for the Year 1936.** [SIMPSON, R.] pp. 36. 10 tables, 3 appendixes. Carlisle: Steel Bros. (Carlisle), Ltd. [8vo].

DURHAM (COUNTY). (1936). **Annual Report of the Chief Veterinary Officer for the Year 1935.** [ALLAN, H. B.] pp. 38. 10 tables, 3 appendixes. Durham: Advertising Printing Works. [8vo].

ESSEX (COUNTY). (1937). **Report of the Chief Veterinary Officer for the Year 1936.** [MEDLOCK, F. W.] pp. 36. 12 tables, 3 graphs, 1 map. Chelmsford: John Dutton Ltd. [8vo].

	Work done under Milk & Dairies Order, 1926. Milk & Dairies (Consolidation) Act, 1915 (Sect. 4). Milk & Dairies (Scotland) Act, 1914.						
	1	2	3	4	5	6	7
	Number in County.		Number examined (routine).		No. of cases of TB. found (excl. 6).	No. of cases of udder TB. found.	No. of sam found contai T. bac
	Dairy Herds	Cows	Herds	Cows			
Staffordshire	5,630	100,488	7,690	138,268	176+765	159+328	150
Cumberland	4,000	57,000		48,539	65	28	41
Durham		26,923		51,039	115	89	117 +
Essex	1,838 + 46	37,000				248	105
West Sussex	1,136	20,964	nearly all	74,310		55	55 +
Lanark			4,189	97,190	87	71	110
Midlothian	204	4,691	all	12,460	26		11
Renfrew	424	26,724	all	32,978	71		7
Wigtown		26,700		53,266	38		5

NOTE. A blank denotes " no information " ; a dash denotes " no cases observed ". Double figures linked by + = not clear whether the smaller number is included in the larger.

ADDITIONAL NOTES.

STAFFORDSHIRE. Veterinary Staff – seven. Routine inspection statistics given.

CUMBERLAND. Veterinary Staff – four. Tuberculosis Order statistics given for 1933-1936 inclusive.

DURHAM. Veterinary Staff – five. Tuberculosis Order statistics given for 1926-1936 inclusive.

WEST SUSSEX (COUNTY). (1937). **Annual Report of the Chief Veterinary Officer, 1936-37.** [JORDAN, L.] pp. 43. 18 tables. [8vo].

LANARK (COUNTY). (1937). **County Veterinary Officer's Report for the Year 1936.** [WEIR, J.] pp. 18. 5 tables, 2 appendixes. Glasgow: Robert Anderson & Sons Ltd. [8vo].

MIDLOTHIAN (COUNTY). (1937). **Report by County Veterinary Inspector under Milk and Dairies (Scotland) Act, 1914 for Year 1936.** [MACRAE, W. D.] pp. 6. 6 tables, 2 appendixes. [fcp] [Mimeographed].

RENFREW (COUNTY). (1937). **Annual Report of the Chief Veterinary Officer for the Year 1936.** [M'LEOD, A. M. K.] pp. 16. 6 tables. Paisley: Alexander Gardner, Ltd. [8vo].

WIGTOWN (COUNTY). (1937). **Annual Report by the County Veterinary Inspector.** [M'QUAKER, J.]—*Rep. publ. Hlth Dep. Wigtown, 1936.* pp. 101-113. 3 tables.

Milk (Special Designations) Orders of 1923 and 1936.			Tuberculosis Order, 1925.		Notifiable Diseases (Still prevalent).				
Number of Producers of Graded Milk.					Cases in roman. Outbreaks in *italics.*				
8	9	10	11	12	13	14	15	16	17
T.T. (Certified).	T.T.	Accredited.	No. of cases of TB. (excl. 12).	No. of cases of Udder TB.	Anthrax.	F. & M. Disease.	Swine Fever.	Mange.	Sheep Scab.
4	6	1,633	997	721					
42		269	195	41	4	–	*30*		*4*
12	1	164	255	127	5	–	*10*	4	*30* (156)
46			68	172	10	–	*40*	5	*4*
11	17	268	264	77	2	–	*12*	–	–
	71	3	210	89					
4	2		62	10					
20	11		85	27	2		5		–
2	8		297		19				–

ESSEX. Veterinary Staff – three (increased to eight in October). Tuberculosis Order statistics given for 1925-1936 inclusive. Map of County showing incidence of Notifiable Diseases given.

WEST SUSSEX. Veterinary Staff – five. Particulars of tuberculin testing experiment are given.

LANARK. Veterinary Staff – two. A graph gives the number of cattle dealt with under the Tuberculosis Order since 1926.

MIDLOTHIAN. Veterinary Staff – two. Meat inspection statistics given.

RENFREW. Veterinary Staff – two.

WIGTOWN. Veterinary Staff – one. Meat inspection statistics given.

BOOK REVIEWS.

DUKES, H. H. [D.V.M., M.S., Professor of Veterinary Physiology, New York State Veterinary College, Cornell University]. (1937). **The Physiology of Domestic Animals.** pp. xiv + 695. 167 figs., numerous tables. [Numerous refs.] London: Baillière, Tindall & Cox. [4th Edit.] [8vo] [27s. 6d.]

This new edition has been again extensively revised and somewhat enlarged. From its relatively simple first edition the book has now become a really excellent text-book for veterinary students and is warmly recommended. For review of the third edition see *V. B.* **6.** 628.—J. E.

CLAY, H. H. [F.R.San.I., F.I.S.E. Lecturer in Sanitary Engineering, London School of Hygiene and Tropical Medicine (University of London)]. (1937). **The Sanitary Inspector's Handbook.** pp. xxii + 480. 95 figs., numerous tables. London: H. K. Lewis & Co., Ltd. [3rd Edit.] [8vo] [16s. 6d.]

This new edition, appearing only 22 months after the second edition, was rendered necessary by reason of new legislation, and the whole book has been revised to bring it up to date for the Public Health Act, 1936, Housing Act, 1936, Factories Act, 1937, and others. Technical matter in general has also been revised so that the 3rd edition is 100 pages larger than the 2nd.

Detailed opinions of this excellent book have been given in earlier reviews – *V. B.* **4.** 82, and **6.** 630.—J. E.

GATENBY, J. B. [M.A., Ph.D., D.Sc., B.A., B.Sc., D.Phil. (Oxon). Prof. Zoology and Comparative Anatomy, Trinity College, Dublin University]. (1937). **Biological Laboratory Technique. An Introduction to Research in Embryology, Cytology and Histology.** pp. vii + 130 + 16. 8 figs. London: J. & A. Churchill, Ltd. [8vo] [7s. 6d.]

This is a sort of pocket edition of Bolles Lee's Microtomists' Vademecum, the later editions of which have been edited by G.; in it the principles of biological technique are very clearly and simply laid out, and the various methods are evaluated and applied to histological, embryological and pathological studies. In addition to being a fine introduction and guide to the student, the book should prove a valuable reference for the teacher and research worker.—NORMAN HOLE.

DAVENPORT, C. B., & EKAS, Merle P. (1936). **Statistical Methods in Biology, Medicine and Psychology.** pp. xii + 216. 26 figs., numerous tables. [Numerous refs.] New York: John Wiley & Sons, Inc.; London: Chapman & Hall Ltd. [4th Edit.] [8vo] [13s. 6d.]

A revised edition of a well-known standard text-book, taking into consideration the extensive literature that has appeared since the first edition in 1899 – notably the analysis of variance and extension of the theory of small samples developed by R. A. FISCHER.

Considerable mathematical knowledge is presumed on the part of the reader so that the work is primarily one for students of statistical methods and not for general scientific workers in search of elementary principles. The 37 tables at the end include those of most value to biologists.—H. H. GREEN.